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Johnston et al.

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(45) **Date of Patent:** **Jan. 31, 2012**

(54) **INTERACTIVE ELECTRONIC BILL
PAYMENT SYSTEM**

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(Continued)

(73) Assignee: **Emergis Inc.**, Montreal (CA)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 997 days.

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(22) Filed: **Oct. 22, 2002**

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Related U.S. Application Data

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(30) **Foreign Application Priority Data**

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Oct. 21, 2002 (CA) 2409078

(51) **Int. Cl.**
G07F 19/00 (2006.01)
G06F 17/60 (2006.01)

(52) **U.S. Cl.** **705/34; 705/40**

(58) **Field of Classification Search** **705/2, 4, 705/40, 26-34**

See application file for complete search history.

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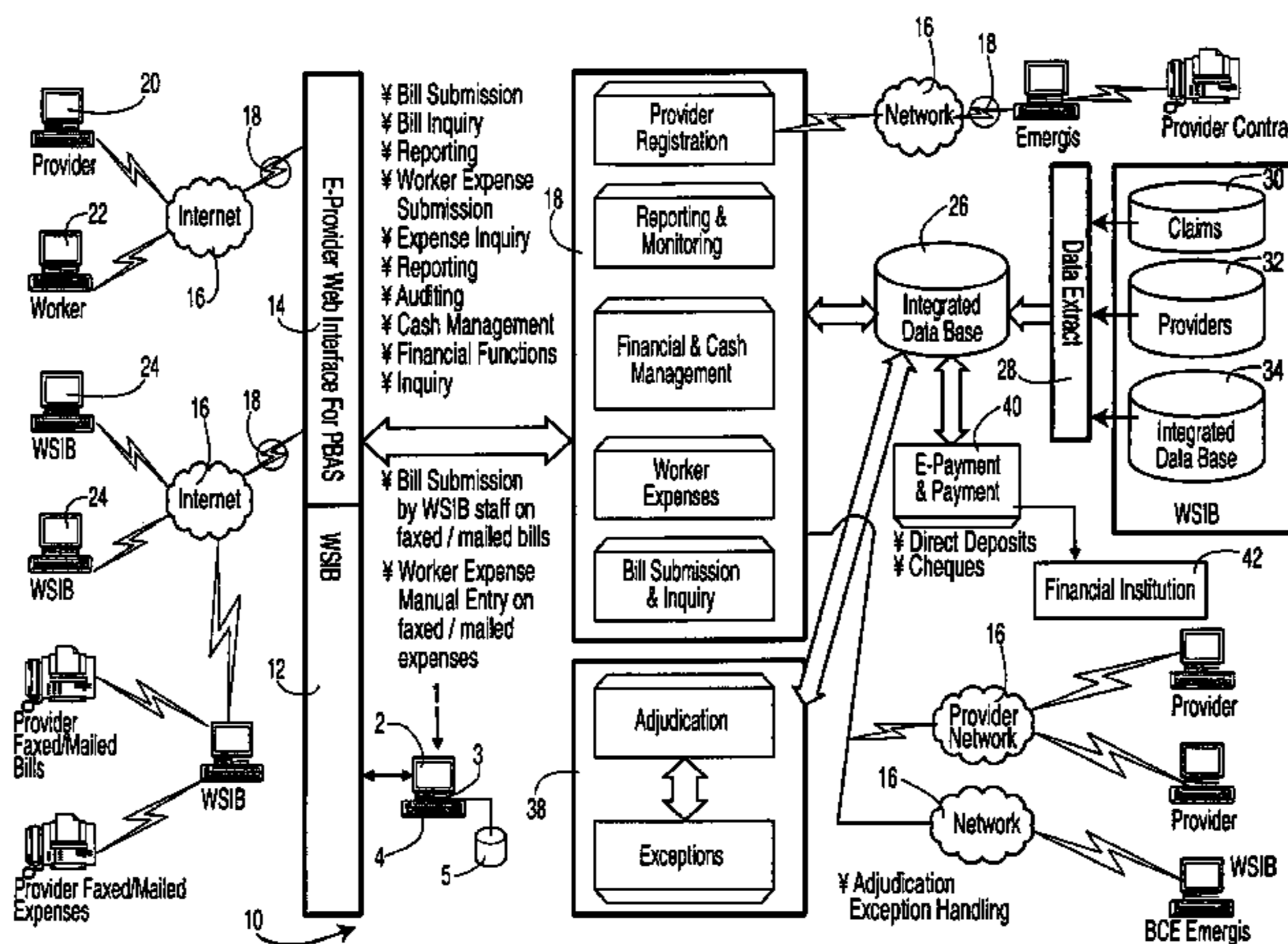
Primary Examiner — Garcia Ade

(74) *Attorney, Agent, or Firm* — Grant Tisdall; Gowling Lafleur Henderson LLP

(57) **ABSTRACT**

A system for coordinating the submission and processing of a bill according to predictive payment data of a plan. The system comprises a provider interface and an integrated database for receiving a predictive payment plan submitted from the provider interface. The system also has a predictive payment request of the plan storable in the database, the request including a plurality of predictive payment parameters. An adjudication engine is coupled to the integrated database, and an insertion function is used for inserting the predictive payment parameters, when stored in the database, into an adjudication rule set of the adjudication engine. The adjudication rule set is used for eventual adjudication of the predictive payment data, wherein adjudication of the predictive payment data results in the generation of the bill. The system also has a workflow engine coupled to the integrated database for coordinating the processing of the electronic bill and for updating the bill information in response to the bill processing. A management system is coupled to the integrated database for monitoring the contents of the integrated database accessible by the provider interface, wherein the provider can coordinate real-time retrieval of submission and status details for bill information contained in the integrated database.

60 Claims, 24 Drawing Sheets



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Figure 1

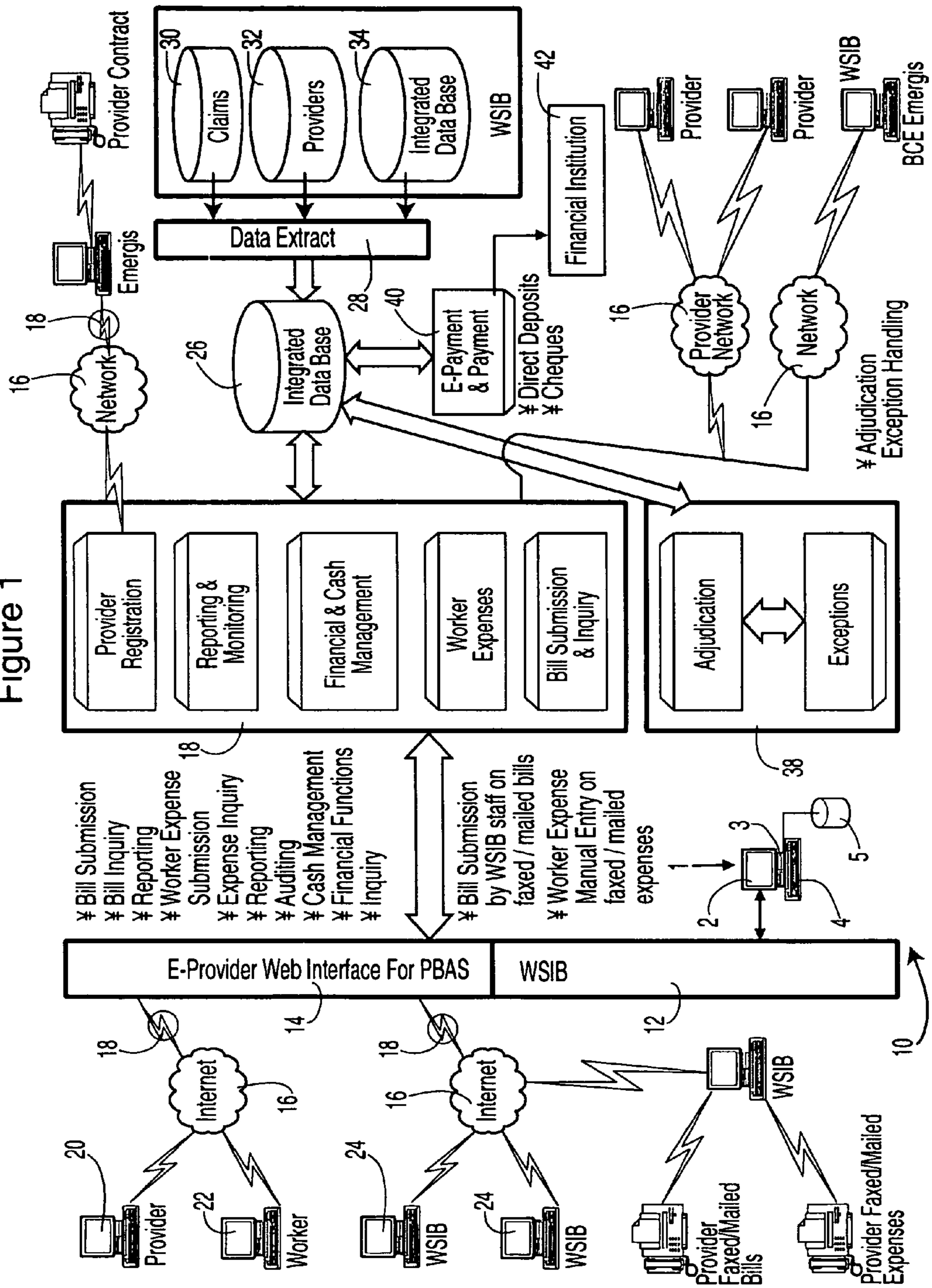


Figure 2

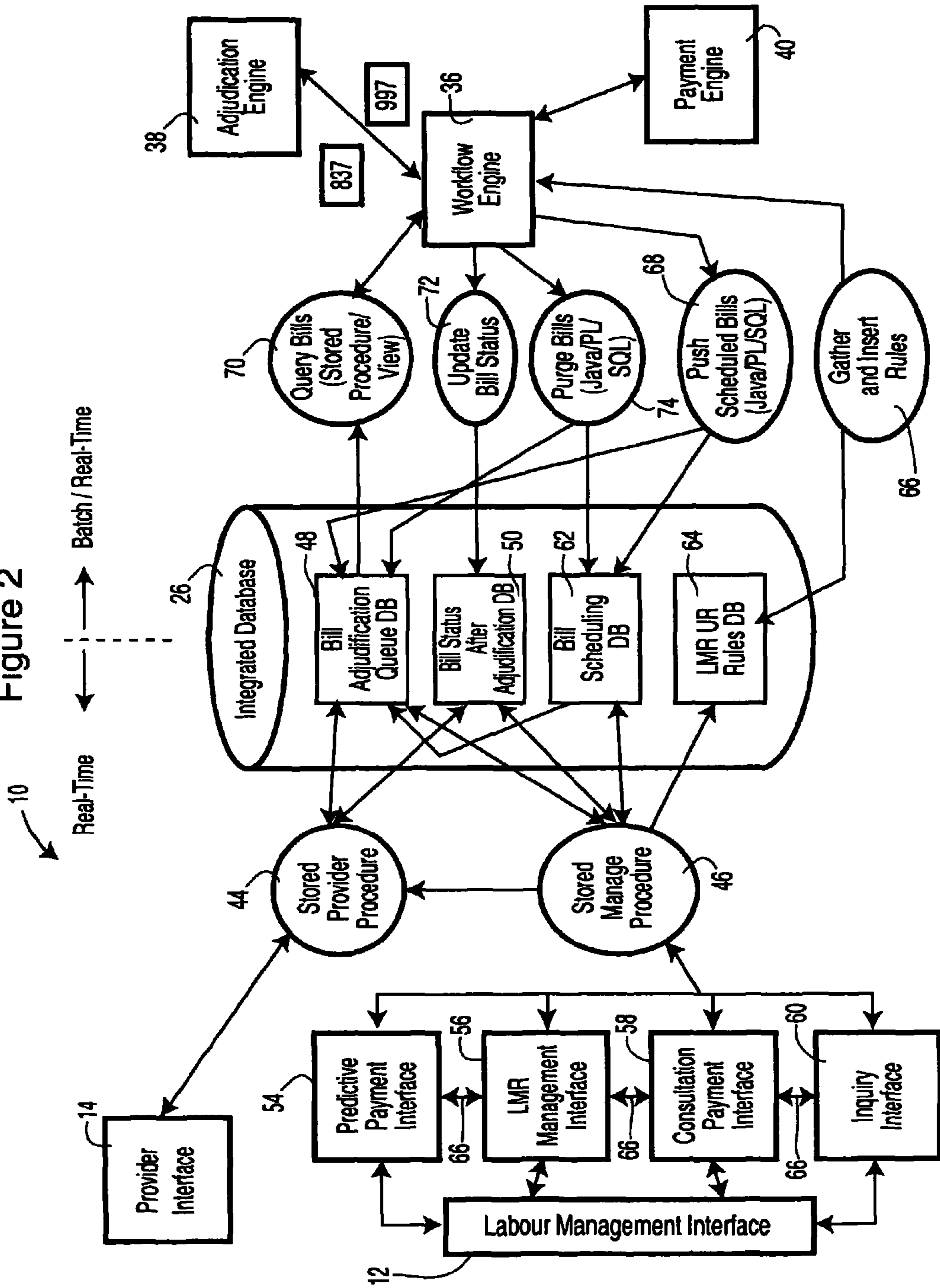


Figure 3

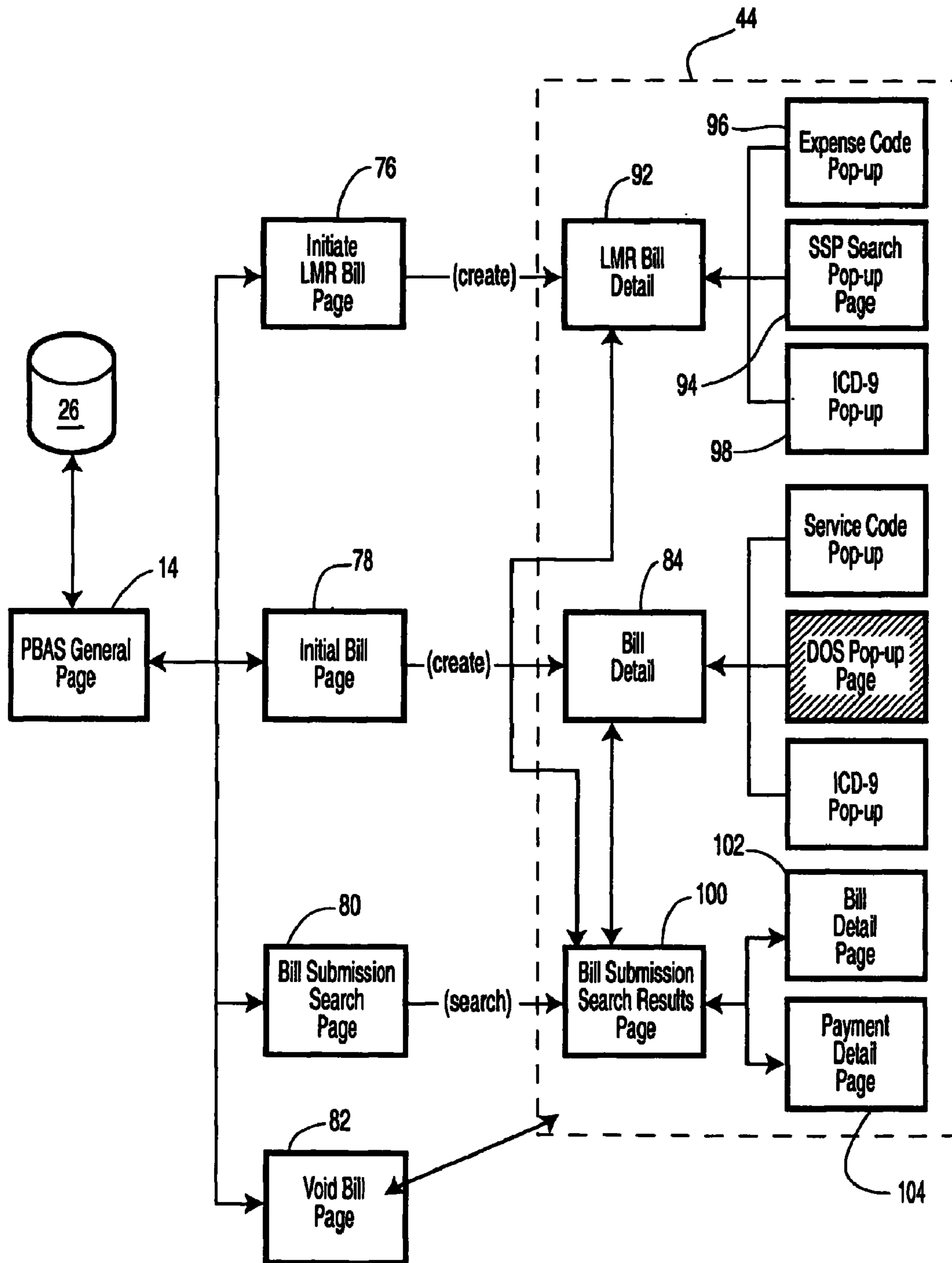


Figure 4

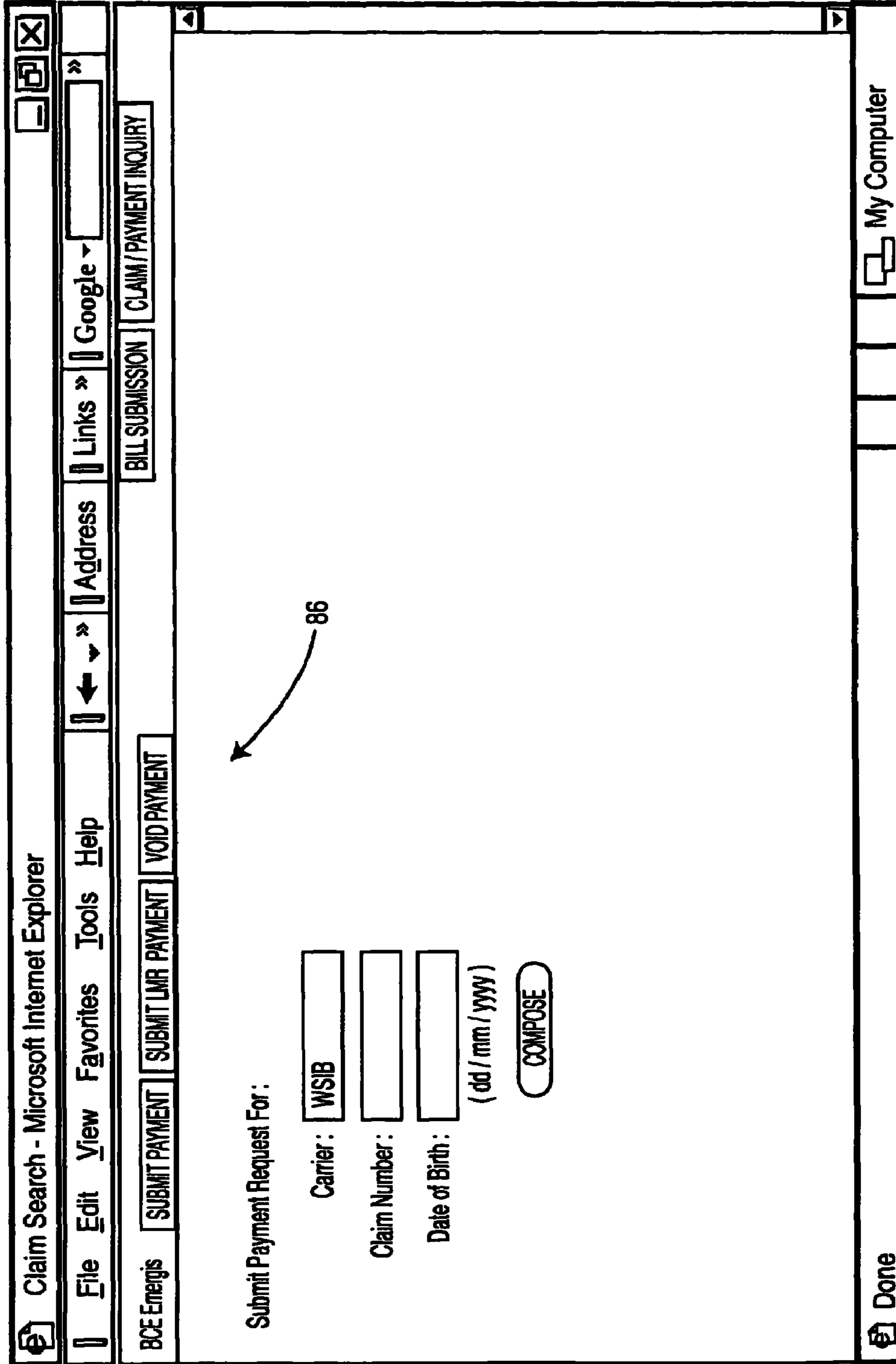


Figure 5A

BCE Emergis		SUBMIT PAYMENT	VOID PAYMENT	BILL PAYMENT STATUS	BILL SUBMISSION	BILL / PAYMENT INQUIRY		
Provider Information								
		Health Payment Request Confirmation			Invoice Reference #: 1234 May			
Claim Information:		Provider Number: P111 87		Date of Birth: 02-May-1902				
		Claim Number: C111		Date of Accident: 02-May-2002 91				
		Patient Surname: PS111 89						
		Patient Given Name: PG111						
Bill Line Items								
No.	Service Code	Modifier	ICD-9	Date of Service	POS	Type	Units	Charges
1	SSCode - 111	Code : 111	Code : 111	03 / 04 / 2002	Code : 111	Health	1	\$ 18.74
2	SSCode - 111	Code : 111	Code : 111	05 / 04 / 2002	Code : 111	Health	1	\$ 18.74
3	SSCode - 111	Code : 111	Code : 111	07 / 04 / 2002	Code : 111	Health	1	\$ 18.74
4	SSCode - 111	Code : 111	Code : 111	09 / 04 / 2002	Code : 111	Health	1	\$ 18.74
5	SSCode - 111	Code : 111	Code : 111	11 / 04 / 2002	Code : 111	Health	1	\$ 18.74
6	SSCode - 111	Code : 111	Code : 111	13 / 04 / 2002	Code : 111	Health	1	\$ 18.74
7	SSCode - 111	Code : 111	Code : 111	15 / 04 / 2002	Code : 111	Health	1	\$ 18.74
8	SSCode - 111	Code : 111	Code : 111	17 / 04 / 2002	Code : 111	Health	1	\$ 18.74
9	SSCode - 111	Code : 111	Code : 111	19 / 04 / 2002	Code : 111	Health	1	\$ 18.74
10	SSCode - 111	Code : 111	Code : 111	21 / 04 / 2002	Code : 111	Health	1	\$ 18.74
11	SSCode - 111	Code : 111	Code : 111	23 / 04 / 2002	Code : 111	Health	1	\$ 18.74
12	SSCode - 111	Code : 111	Code : 111	25 / 04 / 2002	Code : 111	Health	1	\$ 18.74
13	SSCode - 111	Code : 111	Code : 111	27 / 04 / 2002	Code : 111	Health	1	\$ 18.74
14	SSCode - 111	Code : 111	Code : 222	03 / 05 / 2002	Code : 111	Health	1	\$ 20.00
15	SSCode - 111	Code : 111	Code : 222	05 / 05 / 2002	Code : 111	Health	1	\$ 20.00
16	SSCode - 111	Code : 111	Code : 222	07 / 05 / 2002	Code : 111	Health	1	\$ 20.00
17	SSCode - 111	Code : 111	Code : 222	09 / 05 / 2002	Code : 111	Health	1	\$ 20.00
18	SSCode - 111	Code : 111	Code : 222	11 / 05 / 2002	Code : 111	Health	1	\$ 20.00
19	SSCode - 111	Code : 111	Code : 222	13 / 05 / 2002	Code : 111	Health	1	\$ 20.00

Figure 5B

20	SSCode - 111	Code : 111	Code : 222	15 / 05 / 2002	Code : 111	Health	1	\$ 20.00
21	SSCode - 111	Code : 111	Code : 222	17 / 05 / 2002	Code : 111	Health	1	\$ 20.00
22	SSCode - 111	Code : 111	Code : 222	19 / 05 / 2002	Code : 111	Health	1	\$ 20.00
23	SSCode - 111	Code : 111	Code : 222	21 / 05 / 2002	Code : 111	Health	1	\$ 20.00
24	SSCode - 111	Code : 111	Code : 222	23 / 05 / 2002	Code : 111	Health	1	\$ 20.00
25	SSCode - 111	Code : 111	Code : 222	25 / 05 / 2002	Code : 111	Health	1	\$ 20.00
26	SSCode - 111	Code : 111	Code : 222	27 / 05 / 2002	Code : 111	Health	1	\$ 20.00
27	SSCode - 111	Code : 111	Code : 222	29 / 05 / 2002	Code : 111	Health	1	\$ 20.00
28	SSCode - 111	Code : 111	Code : 222	31 / 05 / 2002	Code : 111	Health	1	\$ 20.00
							Total Charges :	\$ 543.62

Submit for Payment

It is an offence to deliberately make false statements to Workplace Safety & Insurance Board.
I hereby certify that the information being submitted is true correct and complete.

Figure 6

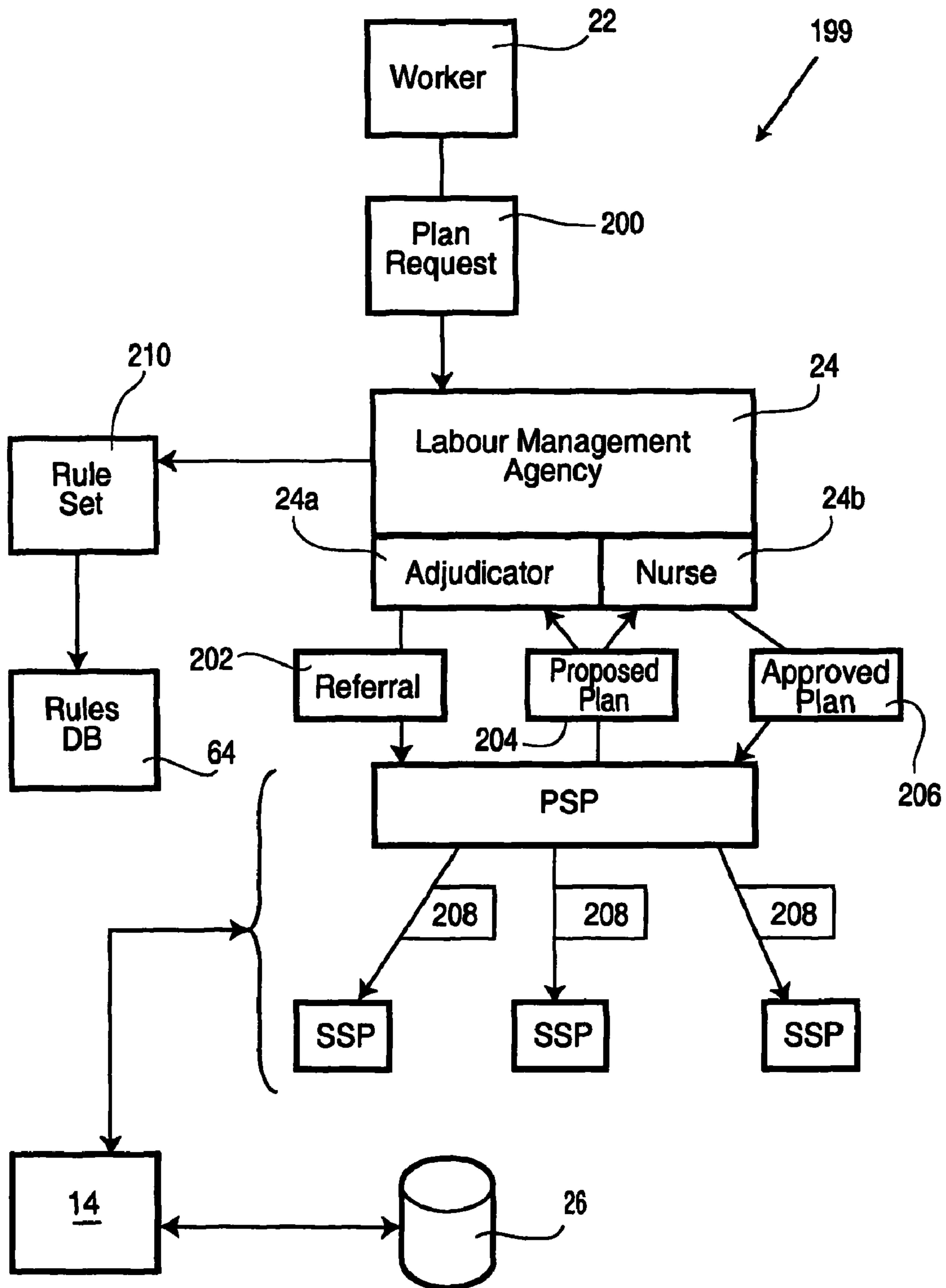


Figure 7

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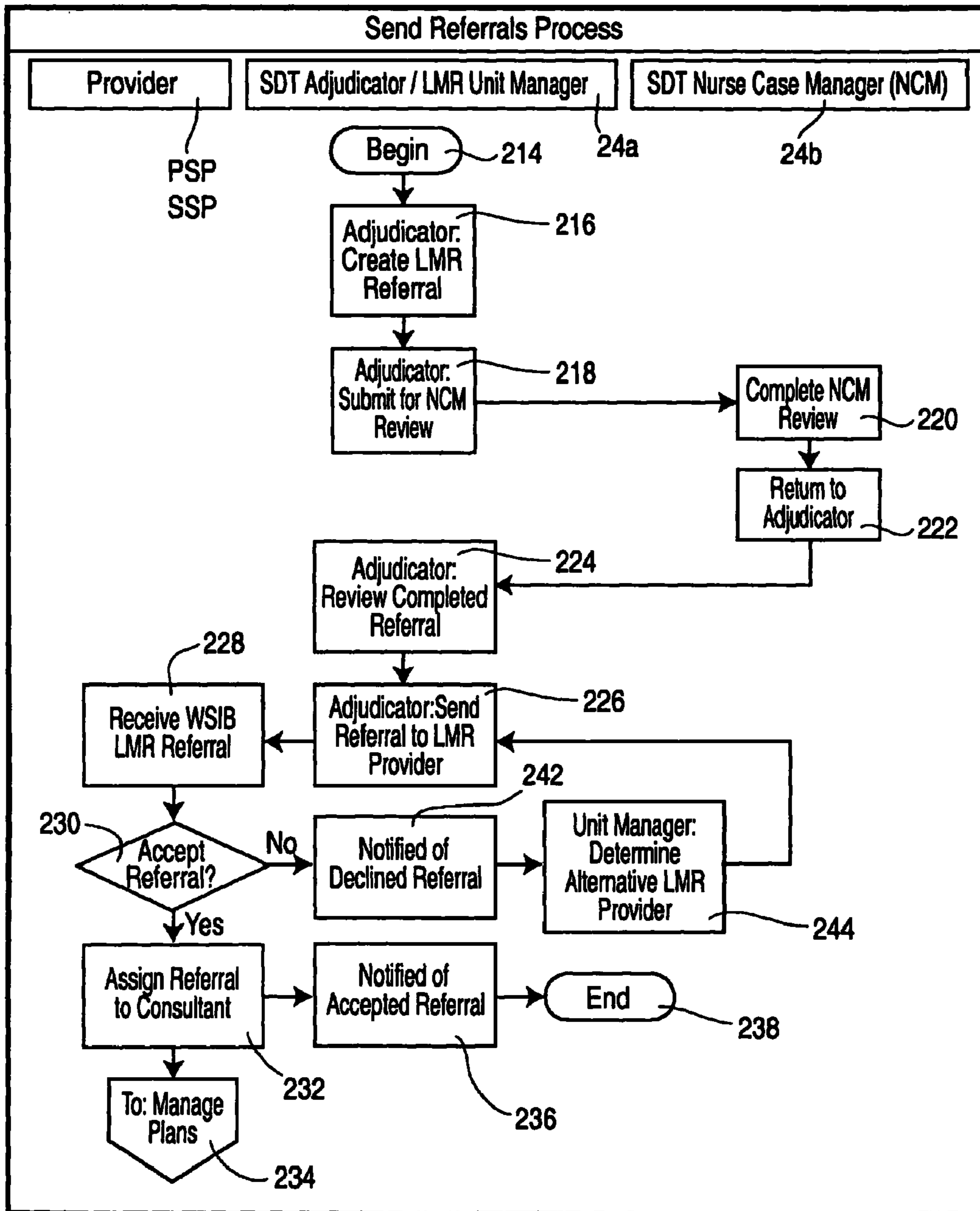


Figure 8

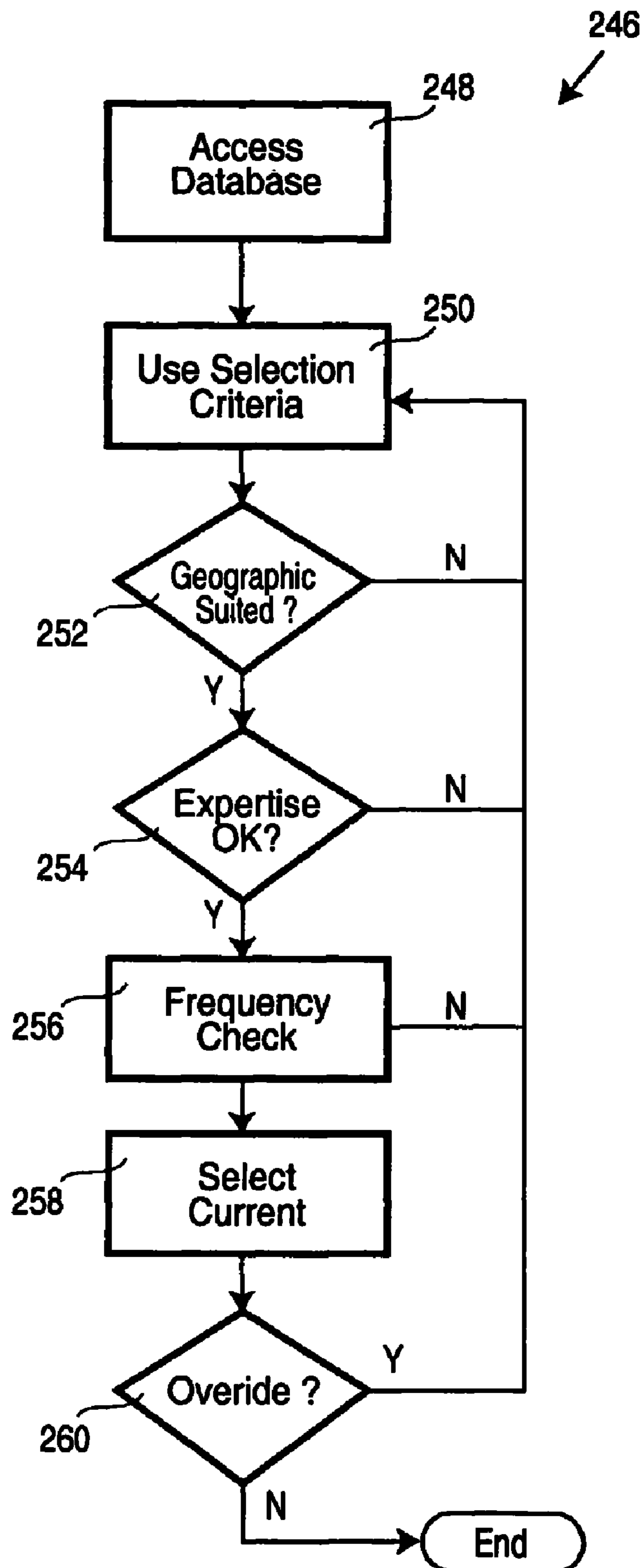


Figure 9

262

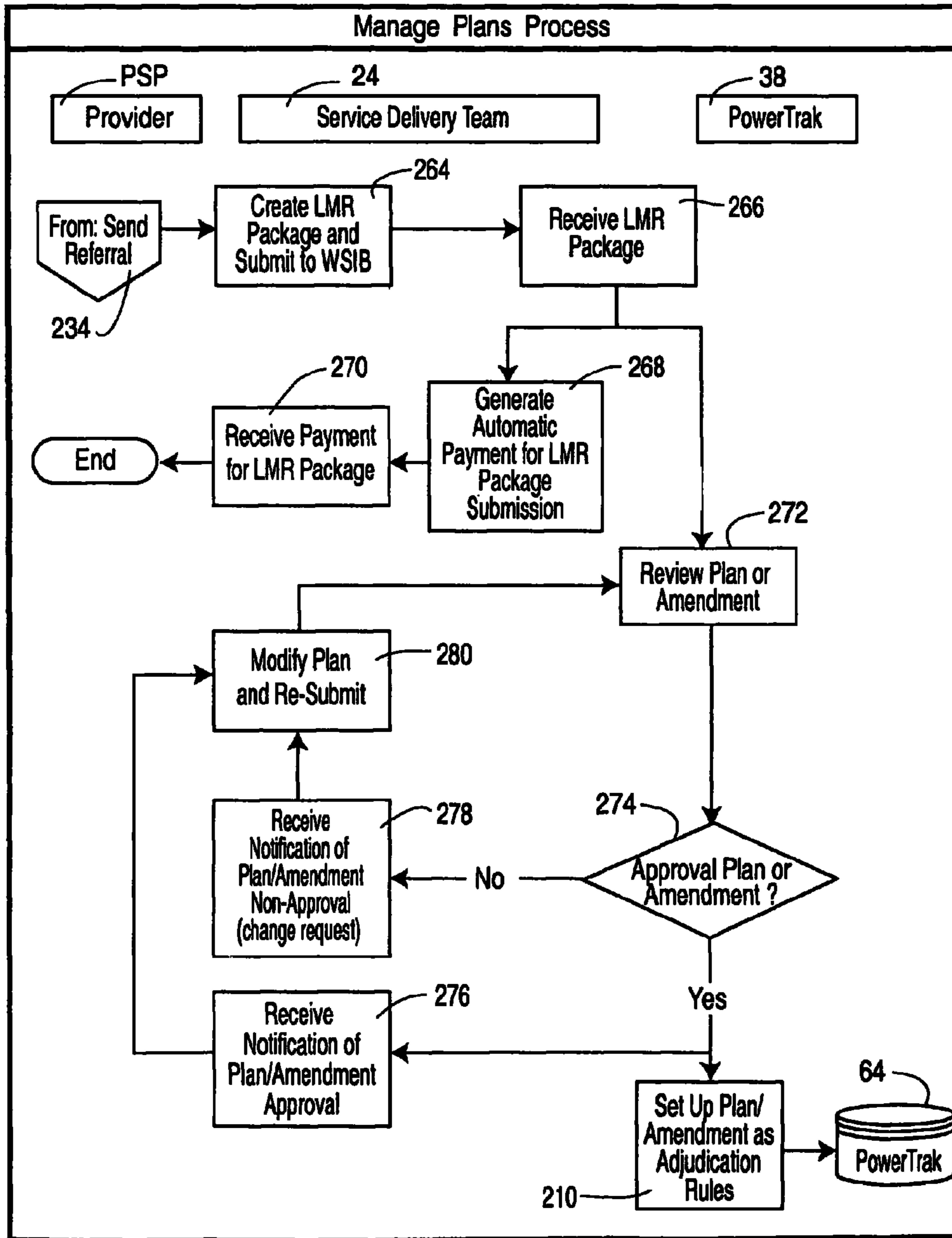


Figure 10

CREATE LMR REFERRAL	RETRIEVE LMR REFERRAL	RETRIEVE LMR PACKAGE	PBAS HOME	EXCEPTIONS MANAGEMENT	LMR PLAN MANAGEMENT	CLAIM / PAYMENT INQUIRY
WORKER DETAILS		EMPLOYMENT PROFILE	REFERRAL DETAILS	LMR PROVIDER DETAILS		
Referral ID : 1111	Referral Status : Pending	Claim # : 1045	Worker Name (last) : Sing	Worker Name (first) : Sarah	Date of Accident : 04 / 04 / 2000	(mm / dd / yyyy)
Date Sent :	Date Accepted :	Address : 77 Sarasota Street	Telephone : 416-555-1234	Gender : Female	Date of Birth : 10 / 06 / 1971	First Language : English
		City : Sussex		Interpreter : <input type="checkbox"/>		
		Postal Code : S1S 6S6				
Injury / Diagnosis :			% Permanent Disability : 0	% NEL : 5		
If Applicable						
Worker's Representative :	<input type="text"/>	Telephone Number :	<input type="text"/>			
	<input type="button" value="SAVE"/>	<input type="button" value="SUBMIT"/>	<input type="button" value="EXIT"/>	<input type="button" value="PRINT VIEW"/>		

Figure 11

CREATE LMR REFERRAL	RETRIEVE LMR REFERRAL	RETRIEVE LMR PACKAGE	PBAS HOME	EXCEPTIONS MANAGEMENT	LMR PLAN MANAGEMENT	CLAIM / PAYMENT INQUIRY
WORKER DETAILS		EMPLOYMENT PROFILE	REFERRAL DETAILS	LMR PROVIDER DETAILS		
Referral ID :	1111	Claim # :	1045			
Referral Status :	Pending	Worker Name (last) :	Sing			
Date Sent :		Worker Name (first) :	Sarah			
Date Accepted :		Date of Accident :	513			
Pre-Injury NOC :	121	Employment Type :	Full time			
Pre-Injury Job Title :	Clerical Supervisor	If 'Other', Specify :				
Pre-Injury Hourly Wage :	10	Weekly WSIB Benefits :	345			
Pre-Injury Hours per Week :	40	Pre-90 Target Wage :				
Gross Escalated Pre-Accident Earnings :						
Accident Employer :	BCE Emergis	Firm :	111			
Telephone :	416-223-4444	Address :	5090 Explorer Drive			
Fax :	905-232-1245	City :	Mississauga			
Contact Person :	Peter Wilson	Postal Code :	M2J 1K3			
Contact Person Telephone :	416-222-4423	WSIB Mediation Services Used ?	<input type="checkbox"/>			
Return to work Negotiations? (With Accident Employer)	<input checked="" type="checkbox"/>					
	SAVE		SUBMIT		EXIT	PRINT VIEW

Figure 12

Referral ID : 1111
 Referral Status : Pending
 Date Sent :
 Date Accepted :

Claim # : 1045
 Worker Name (last) : Sing
 Worker Name (first) : Sarah
 Date of Accident : 04 / 04 / 2000
 (mm / dd / yyyy)

Activities / Precautions (Related to Compensable Permanent Impairments). Check all that apply

Lifting	<input type="checkbox"/>	Carrying	<input checked="" type="checkbox"/>	Pushing	<input type="checkbox"/>	Sitting	<input type="checkbox"/>	Standing	<input type="checkbox"/>
Walking	<input type="checkbox"/>	Kneeling	<input type="checkbox"/>	Crouching	<input type="checkbox"/>	Crawling	<input type="checkbox"/>	Fingering	<input type="checkbox"/>
Gripping	<input type="checkbox"/>	Psychological	<input type="checkbox"/>	Bending	<input checked="" type="checkbox"/>	Pulling	<input type="checkbox"/>	Handling	<input checked="" type="checkbox"/>

Reaching : Climbing :

Precautions discussed with Worker. Date Discussed :

Source of Precautions:

Details of above Precautions:

Pushing / Pulling - not against resistance; no repetitive movements
 Handling - no heavy weights (i.e. 10kg+)

NCM Name : NCM Desk :

Telephone Number :

Figure 13

CREATE LMR REFERRAL RETRIEVE LMR REFERRAL RETRIEVE LMR PACKAGE	PBAS HOME EXCEPTIONS MANAGEMENT LMR PLAN MANAGEMENT CLAIM / PAYMENT INQUIRY
WORKER DETAILS EMPLOYMENT PROFILE PHYSICAL PRECAUTIONS REFERRAL DETAILS LMR PROVIDER DETAILS	
Referral ID : 1111 Referral Status : Pending Date Sent : Date Accepted :	Claim # : 1045 Worker Name (last) : Sing Worker Name (first) : Sarah Date of Accident : 04 / 04 / 2000 (mm / dd / yyyy)
LMR Assessment Required : <input checked="" type="checkbox"/> French Services : <input type="checkbox"/> Warning : <input type="checkbox"/> Referral discussed with worker : <input type="checkbox"/>	Out of Province : Select one of the values Prior VR / LMR Services : <input type="checkbox"/> Relevant Legislation : Bill 99
Additional Details :	<div style="border: 1px solid black; padding: 5px;">ESRTW Outcome : -Adj. contacted employer to arrange modified work on 2 Aug 00 -A/E unable to accommodate working during performances; Advised of LMR referral. A/E understood</div>
Adjudicator Information :	Name : Mat Rosi Desk ID : MF001 Office : Small Business Telephone : 416-344-1000 Sector : Small Business
	SAVE SUBMIT EXIT PRINT VIEW

Figure 14

CREATE LMR REFERRAL	RETRIEVE LMR REFERRAL	RETRIEVE LMR PACKAGE	PRAS HOME	EXCEPTIONS MANAGEMENT	LMR PLAN MANAGEMENT	CLAIM / PAYMENT INQUIRY
WORKER DETAILS	EMPLOYMENT PROFILE	PHYSICAL PRECAUTIONS	REFERRAL DETAILS	LMR PROVIDER DETAILS		
Referral ID : 1112	Referral Status : Pending	Date Sent :	Date Accepted :	Claim # : 1045	Worker Name (last) : Sing	Worker Name (first) : Sarah
Name Provider : nrcs	Case Manager Name (last) :	Case Manager Name (first) :	Case Manager Tel :	Case Manager Fax :	Date of Accident : 04 / 04 / 2000	(mm / dd / yyyy)
LMR Package Target Due Date : (30 Days After Referral Acceptance)	LMR Package Proposed Due Date :	Explanation for Due Date Revision :				
<input type="button" value="EDIT"/>	<input type="button" value="SUBMIT"/>	<input type="button" value="EXIT"/>	<input type="button" value="PRINT VIEW"/>			

Figure 15

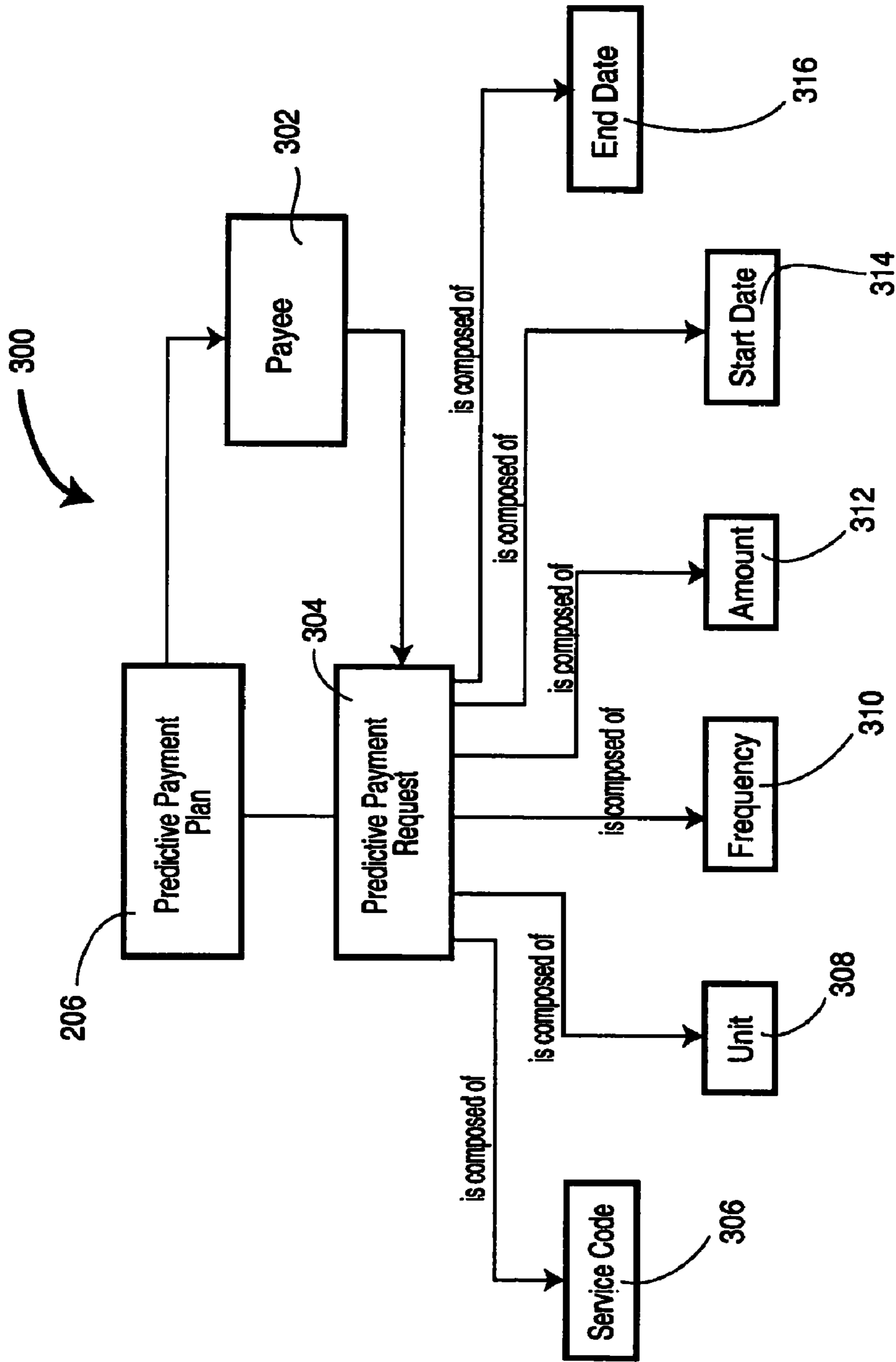


Figure 16

VIEW NOTIFICATIONS		RETRIEVE LMR REFERRAL		RETRIEVE LMR PACKAGE		PBAS HOME		LMR PLAN MANAGEMENT	
PLANHEADER		PLANDETAIL		ASSESSMENT		CEW		VIEW PAYMENTS	
Plan ID: 1112_1		Plan Status: Pending		Claim #: 1045		Worker Name (last): Sing		Worker Name (first): Sarah	
Date Submitted: (mm / dd / yyyy)		Date Approved: (mm / dd / yyyy)		Date of Birth: 06 / 10 / 1971 (mm / dd / yyyy)		Date of Accident: 04 / 04 / 2000 (mm / dd / yyyy)		Case Manager Telephone: 905-222-1123	
Provider: nracs		Case Manager (last): Short		Fax:		Case Manager Telephone: 905-222-1123		Fax:	
Case Manager (last): Fem		Pre-Injury Noc: 121		Weekly WSIB Benefit Payments: \$		Pre-Injury Job Title: Clerical Supervisors		Gross Escalated Pre Accident Earnings: \$	
		Pre-Injury Hourly Wage: \$ 10.00		Pre-90 Target Wage: \$		Pre-Injury Hourly Wage: \$ 8.97		Pre-90 Target Wage: \$	
		Pre-Injury Hours per Week: 40.00		SEB (NOC) Code: 145		SEB Hourly Wage: \$ 8.97		SEB Hours per Week: 40	
		SEB: Library, Correspondent		Adjudicator Desk: MF001		Total Plan Cost: \$			
Plan Start Date: (mm / dd / yyyy)		Plan End Date: (mm / dd / yyyy)		SAVE		SUBMIT		EXIT	
								PRINT VIEW	

Figure 17A

PBAS HOME | LMR PLAN MANAGEMENT

VIEW NOTIFICATIONS | RETRIEVE UMR REFERRAL | RETRIEVE UMR PACKAGE | VIEW PAYMENTS

PLAN DETAIL | ASSESSMENT | CEW

PLAN HEADER

Plan Status : Pending
 Plan Start Date : 23/10/2000
 Plan End Date : 13/04/2001
 Total Plan Cost : \$ 27000.00
 Plan ID : 1112_2

CLAIM # : 1045
WORKER NAME (LAST) : Sing
WORKER NAME (FIRST) : Sarah
DATE OF ACCIDENT : 04 / 04 / 2000

No.	Expense	SSP	Amount (\$)	Start Date : (mm / dd / yyyy)	End Date : (mm / dd / yyyy)	Delete
1	LMR-Provider Travel (x)	nrcs	10800.00	10/23/2000	04/13/2001	<input type="checkbox"/>
2	LMR-Urban Transit	worker	408.00	10/23/2000	04/13/2001	<input type="checkbox"/>
3	LMR-Supplies - Educat	worker	300.00	10/23/2000	04/13/2001	<input type="checkbox"/>
4	LMR-Provider Monitori	nrcs	1620.00	10/23/2000	04/13/2001	<input type="checkbox"/>
5	LMR-Provider Mileage	nrcs	102.00	10/23/2000	04/13/2001	<input type="checkbox"/>
6	LMR-Meals (max.per c	worker	270.00	10/23/2000	04/13/2001	<input type="checkbox"/>
7						<input type="checkbox"/>
8						<input type="checkbox"/>
9						<input type="checkbox"/>
10						<input type="checkbox"/>

Figure 17B

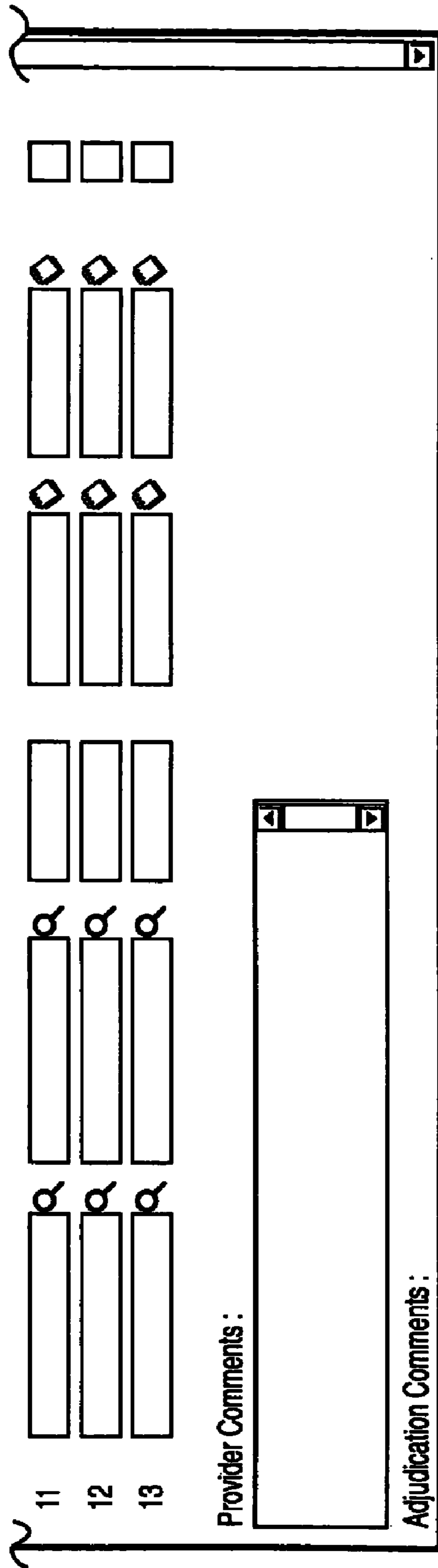


Figure 18

VIEW NOTIFICATIONS		RETRIEVE LMR REFERRAL		RETRIEVE LMR PACKAGE		PBAS HOME		LMR PLAN MANAGEMENT	
PLAN HEADER		PLAN DETAIL		ASSESSMENT		CEW		VIEW PAYMENTS	
Plan Status :	Pending	Claim # :	1045	Worker Name (last) :	Sing	Worker Name (first) :	Sarah	Date of Accident : (mm / dd / yyyy)	04 / 04 / 2000
Plan Start Date : (mm / dd / yyyy)	23/10/2000	Worker Name (last) :	Sing	Worker Name (first) :	Sarah	Date of Accident : (mm / dd / yyyy)	04 / 04 / 2000		
Plan End Date : (mm / dd / yyyy)	13/04/2001	Worker Name (last) :	Sing	Worker Name (first) :	Sarah	Date of Accident : (mm / dd / yyyy)	04 / 04 / 2000		
Total Plan Cost :	\$ 27000.00	Worker Name (last) :	Sing	Worker Name (first) :	Sarah	Date of Accident : (mm / dd / yyyy)	04 / 04 / 2000		
Level of Assessment :	Select one of the values								
Assessment Detail :	<div style="border: 1px solid black; height: 100px;"></div>								
Attachments :	<input type="text" value="Browse..."/>								
Done									
Local Intranet									

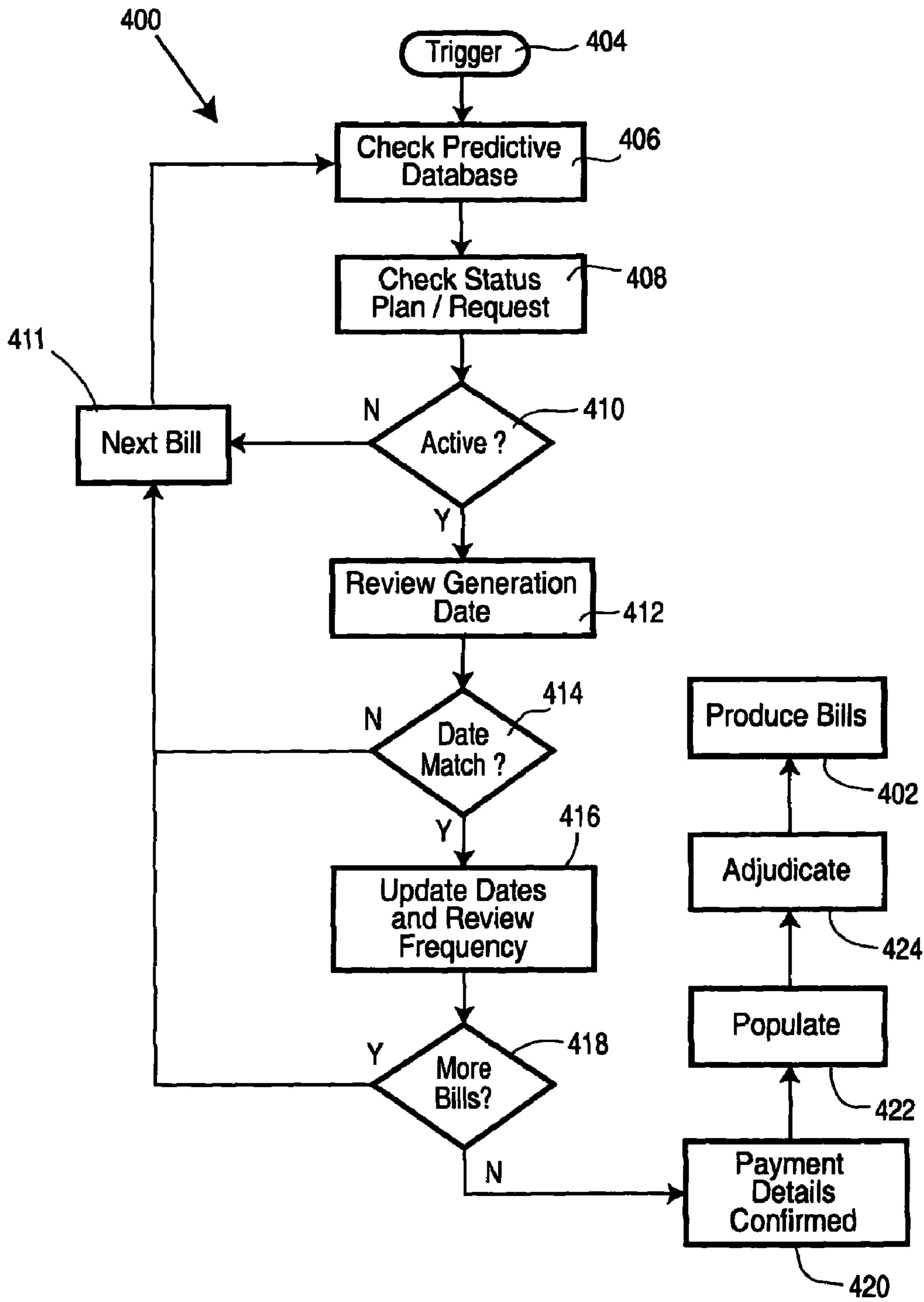
Figure 19

VIEW NOTIFICATIONS	RETRIEVE LMR REFERRAL	RETRIEVE LMR PACKAGE	PBAS HOME	LMR PLAN MANAGEMENT
PLAN HEADER	PLAN DETAIL	ASSESSMENT	CEW	VIEW PAYMENTS
<p>Education / Training : \$ 0</p> <p>Support Services : \$ 0</p> <p>Supplies and Equipment : \$ 600</p> <p>Assessments / Evaluations : \$ 0</p> <p> Provider Related : \$ 25,044</p> <p> Travel Related : \$ 1,356</p> <p> Miscellaneous : \$ 0</p> <p>All Projected LMR Plan Costs : \$ 54,000</p>				
<p>Projected Benefit Costs During LMR Plan : \$ 8,280</p>				
<p>Projected Weekly Benefits : \$ 337.26</p> <p>Projected Yearly Benefits : \$ 17,537.7</p> <p>Years of Projected Benefits After Completion of LMR Plan : 36</p> <p>All Projected LMR Plan Costs : \$ 631,357.04</p>				
<p>GRAND TOTAL : \$ 693,637.04</p> <p>Cost if No LMR : \$ 446,313.17</p>				
<p>EDIT SUBMIT EXIT PRINT VIEW</p>				

Figure 20

VIEW NOTIFICATIONS		RETRIEVE LMR REFERRAL		RETRIEVE LMR PACKAGE		PBAS HOME		LMR PLAN MANAGEMENT	
PLANHEADER		PLANDETAIL		ASSESSMENT		CEW		VIEW PAYMENTS	
No.	Expense	Secondary Service Provider	Amount Approved	Paid Amount					
1.	LMR - Provider Travel (x hrs @ \$45/hr)	nrcs	10,800						
2.	LMR - Urban Transit	worker	408						
3.	LMR - Supplies - Educational and/or Training	worker	300						
4.	LMR - Provider Monitoring (x hrs @ \$90/hr)	nrcs	1,620						
5.	LMR - Provider Mileage	nrcs	102						
6.	LMR - Meals (max. per diem rate - \$ 45/day)	worker	270						
			Plan Total : \$ 13,500		0				
		EDIT		SUBMIT		EXIT		PRINT VIEW	

Figure 22



1**INTERACTIVE ELECTRONIC BILL
PAYMENT SYSTEM**

This application claims the benefit of U.S. Provisional Patent Application No. 60/408,884, filed Sep. 9, 2002.

BACKGROUND OF THE INVENTION**Field of the Invention**

The present invention relates to electronic bill submission and processing, and in particular to insurance claims corresponding to providers of insurance services.

SUMMARY OF THE INVENTION

According to the present invention there is provided an electronic bill processing system for coordinating the submission and processing of an electronic bill corresponding to a provider of insurance services, the system comprising;

- a) a provider interface;
 - b) an integrated database coupled to the provider interface for storing bill information pertaining to the electronic bill;
 - c) a workflow engine coupled to the integrated database for coordinating the processing of the electronic bill and for updating the bill information in response to the bill processing; and
 - d) a management system coupled to the integrated database for monitoring the contents of the integrated database accessible by the provider interface;
- wherein the provider can coordinate real-time retrieval of submission and status details for bill information contained in the integrated database.

According to a further aspect of the present invention there is provided a method for coordinating the submission and processing of a bill according to predictive payment data of a plan. The method comprises the steps of:

- a) storing the predictive payment data corresponding to the plan in a database coupled to an adjudication engine;
- b) inserting a predictive payment parameter into a rule set of the adjudication engine for eventual adjudication of the predictive payment data at a predefined interval, the predictive payment parameter corresponding to a content of the plan;
- c) triggering a creation of the electronic bill at the predefined interval according to the predictive payment parameter;
- d) retrieving the predictive payment data from the database and providing the predictive payment data to the adjudication engine;
- e) updating the predictive payment parameter for recognising the submission of the payment data to the adjudication engine; and
- f) generating the bill as defined by the predictive payment data of the plan once adjudicated.

According to a still further aspect of the present invention there is provided a system for coordinating the submission and processing of a bill according to predictive payment data of a plan. The system comprises

- a) a provider interface;
- b) an integrated database for receiving a predictive payment plan submitted from the provider interface;
- c) a predictive payment request of the plan storable in the database, the request including a plurality of predictive payment parameters;

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- d) an adjudication engine coupled to the integrated database; and
 - e) an insertion function for inserting the predictive payment parameters, when stored in the database, into an adjudication rule set of the adjudication engine, the adjudication rule set for eventual adjudication of the predictive payment data;
- wherein adjudication of the predictive payment data results in the generation of the bill.

BRIEF DESCRIPTION OF THE DRAWINGS

These and other features of the preferred embodiments of the invention will become more apparent in the following detailed description in which reference is made to the appended drawings wherein:

FIG. 1 is an electronic bill processing and management system;

FIG. 2 is a component model of the system of FIG. 1;

FIG. 3 is a component model for a provider bill submission interface for the system of FIG. 1;

FIG. 4 is an example screen of the submission interface of FIG. 3;

FIG. 5 is a further example screen of the interface of FIG. 3;

FIG. 6 shows a Labour Management Re-entry workflow of the system of FIG. 1;

FIG. 7 is a referrals workflow for the re-entry workflow of FIG. 6;

FIG. 8 shows a selection algorithm for the workflow of FIG. 7;

FIG. 9 is a manage plans workflow for the re-entry workflow of FIG. 6;

FIG. 10 shows a first graphical user interface for the workflow of FIG. 7;

FIG. 11 shows a second graphical user interface for the workflow of FIG. 7;

FIG. 12 shows a third graphical user interface for the workflow of FIG. 7;

FIG. 13 shows a fourth graphical user interface for the workflow of FIG. 7;

FIG. 14 shows a fifth graphical user interface for the workflow of FIG. 7;

FIG. 15 shows the components of a predictive payment request for the system of FIG. 1;

FIG. 16 shows a first graphical user interface for the workflow of FIG. 9;

FIG. 17 shows a second graphical user interface for the workflow of FIG. 9;

FIG. 18 shows a third graphical user interface for the workflow of FIG. 9;

FIG. 19 shows a fourth graphical user interface for the workflow of FIG. 9;

FIG. 20 shows a fifth graphical user interface for the workflow of FIG. 9;

FIG. 21 shows an alternative embodiment of the interface of FIG. 20; and

FIG. 22 is a bill generation workflow of the system of FIG. 6.

**DESCRIPTION OF THE PREFERRED
EMBODIMENTS**

Referring to FIG. 1, an insurance bill electronic processing and management system 10 has user interfaces 12, 14 for communicating over a network 16, such as the Internet, information 18 related to insurance bill submission and processing

corresponding to insurance claims. The user interface 14, such as but not limited to a web browser, facilitates electronic submission of the bill information 18 between providers 20 and an integrated database 26. The providers 20 provide insurance related services to workers 22 making the insurance claims. Management of the insurance services, provided by the providers 20, is overseen by a labour management agency 24. The agency 24 uses the user interface 12 to manage the type and content of the bill information 18 contained within the database 26, as well as coordinating overall processing and access of the bill information 18. It is recognised that the workers 22 could also submit electronic bills through the interface 14 with limited functionality.

The system 10 supplements the bill information 18 with general data parameters 28 obtained from an insurance claim database 30, a provider identification database 32, and an employers/workers database 34. The data parameters 28 are typically not specific to any one bill represented in the bill information 18, such as but not limited to worker addresses, provider names and services, and insurance claim particulars. A workflow engine 36 (see FIG. 2) manages the transfer of the bill information 18 and the data parameters 28 between an adjudication engine 38 and a payment engine 40. The adjudication engine 38 processes any bills, related to the claims, resident in the integrated database 26 to determine what portion of the bills, if any, should be paid out. The adjudication engine 38 therefore receives bills from the providers 20, adjudicates the provider bills according to business rules (including utilisation rules), generates adjudication results for valid "complete" bills, and generates exception records for invalid "exception" bills. The payment engine 40 then directs payment of the adjudicated bills to a financial institution 42 for subsequent payment to the providers 20 and/or workers 22.

Accordingly, the bill information 18 includes details related to bill status, such as pending or approved, related claim data, and bill payment particulars. The providers 20 have real-time access through the interface 14 to selected bill information 18 contained within the integrated database 26, corresponding to pre and post processing of the insurance claims and the related bills. The management agency 24 determines the degree of access by the providers 20 to the bill information 18 through the provider procedures 44 (see FIG. 2), which defines the functionality of the provider interface 14. Real-time accessibility of the bill information 18 resident on the integrated database 26 facilitates self-management, by the providers 20, of the bill processing history once the bills are submitted through the interface 14 to the integrated database 26. Therefore, the integrated database 26 acts as a repository of bill information 18 and payment information related thereto.

Referring to FIG. 1, the management agency 24 can use a support system 1 for monitoring and setting up the electronic processing and management system 10. The support system 1 can include a processor 2 coupled to the interface 12. The processor 2 is coupled to a display 3 for displaying the interface 12 and to user input devices 4, such as a keyboard, mouse, or other suitable devices. If the display 3 is touch sensitive, then the display 3 itself can be employed as the user input device 4. A computer readable storage medium 5 is coupled to the processor 2 for providing instructions to the processor 2 to instruct and/or configure the various components of the system 10, such as but not limited to the interfaces 12, 14, and the processes related to operation of the workflow engine 36 and interfaces 12, 14. These instructions can be used to help set-up and define the protocols and other procedures related to the operation of the system 10. The computer

readable medium 5 can include hardware and/or software such as, by way of example only, magnetic disks, magnetic tape, optically readable medium such as CD ROM's, and semi-conductor memory such as PCMCIA cards. In each case, the medium 5 may take the form of a portable item such as a small disk, floppy diskette, cassette, or it may take the form of a relatively large or immobile item such as hard disk drive, solid state memory card, or RAM provided in the support system 1. It should be noted that the above listed example mediums 5 can be used either alone or in combination.

Referring to FIG. 2, the functionality of the provider interface 14 is controlled by the provider procedures 44, which are predefined by the management procedures 46 according to the desired degree of accessibility to the bill information 18 resident on the integrated database 26. The procedures 44 permit the providers 20 through the interface 14 to select bills, update bills, delete bills, and determine bill status once submitted to the integrated database 26. Sub-databases of the integrated database 26, directly accessible by the providers 20 in real-time, are a bill adjudication queue database 48 and a bill status database 50. The queue database 48 lists bill information 18 including all bills (and corresponding bill details) awaiting adjudication, which preferably are both read and write accessible by the providers 20. The status database 50 lists bill information 18 including a pending status (bills undergoing adjudication), a result status (bill adjudication results), and/or a payment status (bill payment decision), which are preferably only read accessible by the providers 20. Real-time inquiry of these bill statuses and queue are accessible (defined by the provider procedures 44) by the providers 20 through the interface 14, with detailed breakdowns of the adjudication and payment decisions determined by the adjudication engine 38 and the payment engine 40.

Further referring to FIG. 2, the management user interface 12 allows the management agency 24 to make decisions on the operation of the system 10, as well as select, delete, update, and inquire on selected bills submitted by the providers 20 and/or workers 22. The interface 12 has a set of sub-interfaces of a predictive payment interface 54, labour market re-entry (LMR) interface 56, a consultation payment interface 58, and an inquiry interface 60, which are controlled by the management procedures 46 as defined by the management agency 24. The management agency 24 can also use the interfaces 54, 56, 58, 60 to update the provider procedures 44 and management procedures 46. The management agency 24 can use the predictive interface 54 and the LMR interface 56 to define and create individual adjudication rules (utilisation rules UR), related to specific codes (for example LMR codes), for insertion into the business rule set of the adjudication engine 38.

Referring again to FIG. 2, the management procedures 46 provide both read and write interaction of the interfaces 54, 56, 58, 60 with the integrated database 26. Interaction between the interfaces 54, 56, 58, 60 is indicated by arrows 66, which allows for the sharing of billing data and review functionality between the interfaces 54, 56, 58, 60, including such as but not limited to prepopulation of data fields. The interfaces 54, 56, 58, 60 have access to the adjudication queue database 48 and the status database 50 as described above, with further capabilities such as but not limited to editing the operation of the bill queue and amending the bill statuses. The interfaces 54, 56, 58, 60 also have access to sub-databases of a bill scheduling database 62 and an adjudication rules database 64. The scheduling database 62 contains data pertaining to bills removed from the queue database 48 by the workflow engine 36 for future processing, and/or data pertaining to

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predictive bills that are periodically inserted into the queue database 48 by the workflow engine 36 for processing by the adjudication engine 38 and payment engine 40. The adjudication rule database 64 contains adjudication rules created by the interfaces 54 and 56 in response to periodic bill parameters for predictive and LMR insurance claims as controlled by the workflow engine 36. It is recognised that data for bills related to LMR insurance claims could also be stored in the scheduling database 62. The degree of access for the read and write interaction of the database 48, 50, 62, 64 contents could also be limited to various access levels for individuals of the management agency 24, depending upon the individuals' priority. The access to the integrated database 26 from the interfaces 12, 14 can be determined by role based features for individual providers 20 and employees of the management agency 24, as well as state based features used as lock out features to permit sequential rather than parallel editing of the bill information 18 and data parameters 28.

Referring again to FIG. 2, the workflow engine 36 monitors the data content of the sub-databases 48, 50, 62, 64 according to the management procedures 46, as well as amendment of the rule set of the adjudication engine 38 by the contents of the rules database 64. The data content of the databases 48, 50, 62, 64 consists of the bill information 18 and the data parameters 28, which are supplied by the management agency 24, the providers 20, and the workers 22. Adjudication and payment details, generated by the adjudication engine 38 and payment engine 40 respectively, are also coordinated by the workflow engine 36 into and out of the integrated database 26, as required. It is recognised that access of the interfaces 12, 14 to the contents of the integrated database 26 is preferably in real-time. Further, access to the integrated database 26 by the workflow engine 36 is preferably in periodic or batch mode to facilitate processing efficiencies, such as but not limited to lump sum payments to particular providers 20 related to a plurality of adjudicated bills. However, real-time access of the workflow engine 36 to the integrated database 26, for adjudication and payment results, could also be done if desired.

Referring to FIG. 2, the workflow engine 36 coordinates, through a defined gather/insert process 66 by the management procedures 46, the gathering of all adjudication rules from the rule database 64 for insertion into the adjudication engine 38. The workflow engine 36 also coordinates a scheduling process 68 for creating bills from the scheduling database 62 contents, which are scheduled for insertion into the queue database 48 and the processed by the adjudication engine 38 and/or payment engine 40 at specified periodic intervals. The process 68 queries a scheduled bill table of the database 62 to confirm which bills should be processed on a periodic cycle, such as but not limited to a daily cycle, and build any confirmed bills using minimum bill data requirements for the bill queue of the queue database 48. Accordingly, the process 68 extracts scheduling data from the database 62, and then decides whether to hold the bills pertaining to the scheduling data for future action or to populate the bill queue of the queue database 48 with the extracted scheduling data. This population of the queue table permits adjudication of the associated bills in sequence through a query process 70 as described below.

The workflow engine 36 coordinates the query process 70, which queries all bills in the database 48 ready for adjudication, both direct and predictive based. For example, the process 70 will create an 837 flat file containing all bills obtained from the database 48, and then transfer the 837 file to the adjudication engine 36 for processing. The adjudication engine 36 creates an adjudication results file, such as an

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acknowledgement 997 flat file, which is then reviewed by an update process 72 to determine the degree of success/failure of each bill adjudication. The update process 72 also transfers the success/failure details of the 997 file to the status database 50, for subsequent review through the interfaces 12, 14. Further, the update process 72 would also insert and payment details from the payment engine 40, related to the success/failure details of the 997 file. The workflow engine 36 also coordinates a purge process 74 to purge bills from the queue database 48 and the scheduling database 62 if needed. For example, the process 74 will purge all successfully processed bills from the queue database 48 and all bill schedules from the schedule database 62 that have passed their end date. It should be noted that the bill tables of the queue database 48 and the scheduling database 62, along with the query process 70 and the schedule process 68 provides an extraction and processing loop for bills of a predictive nature as entered into the integrated database 26 through the predictive interface and/or the LMR interface 56.

Referring to FIG. 3, the provider interface 14 has four sub-interfaces, namely an initiate LMR bill interface 76, an initiate bill interface 78, a bill submission search interface 80, and a void bill interface 82. The interfaces 76, 78, 80, 82 allow the providers 20 (see FIG. 2) to directly manage electronically their bill submission and results relating to insurance claims of the workers 22. The interface 76 allows the providers 20 to submit bills for payment processing using an electronic version of an LMR provider invoice, such as an electronic version that conforms to an EDI claim import (ASCX12N 837) format. The interface 78 allows the providers 20 to submit bills for payment processing using the electronic version of a provider payment request, such as for example the electronic version conforming to the claim import (ASCX12N 837) format. The interface 80 allows the providers 20 to execute enquiries on their bill submissions and draft bills resident on the integrated database 26. These enquiries can include bill detail, bill history, as well as the status of bill payment submissions. Preferably for processing efficiency, real time confirmation of submissions and payment status information may not be supported, and payment detail may only be available as per a check run schedule implemented by the payment engine 40. The interface 82 allows the providers 20 to manage their bill submissions through void bill actions. For example, in the case of batch mode operation of the adjudication engine 38 and/or the payment engine 40, the interface 82 will support same day avoidance submissions only. Capability could also be included in the system 10 to cancel previously submitted bills once they have been removed from the bill queue in the queue database 48 for adjudication by the adjudication engine 38. Accordingly, the interfaces 76, 78, 80, 82 allow the providers 20 to capture bill detail, save draft bills, export bill detail to the adjudication engine 38, void bill submissions, and query bill detail and payment status.

Referring to FIG. 3, the interface 78 has functionality defined by the provider procedures 44. In particular, the interface 78 has a bill details function 84 of the procedure 44, which allows the providers 20 to initiate payment requests that are subject to invalid data, create payment requests and save submissions, create payment requests and exit submissions, create and submit payment requests subject to an incompleteness, and successfully create and submit payment requests. It is understood that the bills are submitted in response to the providers 20 performing or otherwise providing service, treatment, or products to the workers 22. It is understood that the workers 22 claims are established with the management agency 24 prior to submitting the bills, and the

worker/claim entitlement information has been previously loaded into the adjudication engine **38** and the integrated database **26**. The result of the details function **84** is either a payment request saved as a draft for future submission or a payment request that is submitted for processing through the interface **14** to the integrated database **26**. Further, the providers **20** can use a combination of claim/worker data to submit the bill requests. It is recognised that the details function **84**, and other functions as described below, could be represented as software modules for use by the support system **1**.

A first operation of the function **84** is to indicate that a combination of claims/worker data **89, 91** in the payment request inputted by the provider **20** is invalid. Referring to FIGS. **4** and **5**, the function **84** provides a submit bill menu **86** to the provider **20**, whereby the provider **20** enters a claim number in conjunction with worker/patient **22** profile data **91** (see FIG. **5**), such as but not limited to date of accident, surname, given name, and date of birth, when completed for submission to initiate the payment request. Other claim data **88** includes service codes, modifiers, ICD-9 codes, date of service, place of service, units, and dollar amounts. In this instance, the profile or claim data **88** is determined to be invalid by the provider procedures **44** and the provider **20** is notified the claim/patient information is invalid. Accordingly, the error could be the result of the combination of data **88, 89, 91** is invalid (e.g. wrong claim/worker combination), the claim number (record) does not exist in the integrated database **26** (i.e. the claim has not yet been approved/fed into the appropriate components of the system **10**), and/or a typographical error on the part of the provider **20** when keying in the requisite validation information included in the data **88, 89, 91**. Accordingly, the invalidation process of the provider procedures **44** provides a validation mechanism in order for the provider **20** to proceed with the payment request submission. The provider **20** is given choices to continue with the request session on the interface **14**.

Another operation of the function **84** is to create the payment request and then save the submission in draft for future editing/submission. Initially, the provider **20** navigates on the interface **14** to the bill submission component of the menu **86** and selects the submit payment request submenu option. The provider **20** then enters the data **88, 89, 91** and submits to initiate the payment request. The provider **20** then confirms patient **22**/provider **20** profile information **87, 91** and defines the bill line item information **88**, such as date of service, service code and charge. The provider **20** then saves the payment request without submitting the bill to the integrated database **26**. For example, a warning message could be displayed on the interface **78** advising the provider **20** that the payment request is being saved without submitting the bill to the integrated database **26**. Accordingly, the provider **20** can then retrieve and submit the bill related to the saved payment request at a later date, or can delete the draft bill via the void bill interface **82** as further explained below. It should be noted, referring to FIG. **5**, that the providers **20** have the ability to input a provider specific invoice as a payment request to the integrated database **26**. The data **88** can contain multiple bill line items on a per claim basis, which indicates the specific dates of service for each line and applicable modifiers (for equipment) of the requests. The provider is given further choices to proceed with the request session on the interface **14**.

A further operation of the bill detail function **84** is for the provider **20** to create and exit without saving or submitting the payment request. Accordingly, the provider **20** navigates on the interface **14** to the bill submission component of the menu

86 and selects the submit payment request submenu option. The provider then enters a claim number in conjunction with patient profile data **91** and submits to initiate the payment requests. The provider **20** also confirms the patient **22**/provider **20** profile information **87, 91** and defines the bill line item information **88**, however, then proceeds to exit the request without saving or submitting the bill. Accordingly, the function **84** displays a warning message advising the provider **20** that the request is being exited without saving or submitted. The provider is given further choices to proceed with the request session on the interface **14**.

A further operation of the function **84** is to interact with the provider **20** when creating the payment request, where some of the required data **87, 88, 89, 91** is incomplete. Accordingly, the provider **20** selects the submit payment request from the menu **86** provided by the interface **14**, enters the claim number in conjunction with the patient profile data **91** and submits to initiate the payment request. The provider also confirms the patient **22**/provider **20** profile information **87, 91** and defines the bill line item information **88**. The provider **20** then proceeds to submit the payment request, however, a warning prompt appears informing the provider **20** that the required information is incomplete and that the payment request will not be dispatched for the current claim. The provider is given further choices to proceed with the request session on the interface **14**.

Another operation of the function **84** is for a provider **20** to create and submit a complete payment request. Once the provider **20** has entered the claim number in conjunction with the patient profile data **91**, and confirmed the patient **22**/provider **20** profile information **87, 91** and bill line item information **88**, the provider procedures **44** check that all of the required information is correct and then provides the provider **20** with a confirmation prompt informing that the bill will be dispatched to the integrated database **26** for payment processing. Accordingly, the provider **20** can select OK and the bill will be submitted for processing, can select CANCEL and then edit or otherwise discard the payment request, or if the payment request has been submitted the provider **20** can retrieve from the integrated database **26** the particular payment request and void the related bill. It is also recognised that a popup search box for the selection of primary service providers (POS), representing a list of providers **20** enrolled for use of the system **10**, is accessible by the function **84** for completing the payment request.

Referring to FIG. **3**, LMR bill interface **76** of the general provider interface **14** enables LMR providers **20** to submit LMR invoices to the management agency **24** for payment via electronic submission provided by the system **10**. The LMR bills are for service, treatment, or products provided/performed by the provider **20** according to an approved LMR plan as accommodated for in the integrated database **26** and the adjudication engine **38**. It is recognised that the utilisation rules (UR) of the rules database **64** have been loaded by the work flow engine **36** into the adjudication engine **38** prior to submission of the LMR invoice. The provider procedures **44** contain an LMR bill detail function **92** for coordinating the creation and submission of LMR invoices (payment requests). It is noted that the LMR providers **20** can identify the combination of claim/patient profile information **89, 91** to proceed with a payment request submission through the validation mechanism, as described above in relation to the function **84**. Further, the LMR providers **20** can submit multiple lines of service as bill line items **88** on a per claim basis and can identify an SSP for each of the lines of service. Further, the LMR providers **20** also indicate specific dates of service for each line of service included in the data **88** as well as

indicating applicable modifiers (for equipment) in the LMR invoices. In addition to that described above for the function **84**, the function **92** also allows the LMR provider **20** to identify the secondary service provider (SSP) for which the bill line items **88** apply. Preferably, only one SSP is identified per bill and all line items **88** are associated accordingly. Further, the function **92** also operates with a search popup page **94**, which is supplied to the provider **20** through the interface **76**. The popup page **94** allows the provider **20** to search and select appropriate SSPs. In addition, further popup pages of an expense code **96** and an ICD-9 **98** can be provided by the function **92** to the interface **76** to allow the provider **20** to clarify and confirm portions of the data **88** corresponding to expenses and ICD-9 information. Accordingly, similar to the function **84**, the function **92** also allows the provider to select OK for submitting the LMR invoice for processing, selecting CANCEL and/or EDIT discard features for the LMR invoice, and if the invoice has been previously submitted the provider **20** can retrieve and void the invoice. Further, more than one SSP can be selected through the popup page **94** to be included in the LMR invoice.

Referring to FIG. 3, the sub-interface **82** of the general provider interface **14** enables the providers **20**, both payment requests and LMR invoices, to cancel bill submissions and/or draft bills. It should be noted, for batch mode operation of work flow engine **36** the voiding of bills may only be available for same day cancellations, or any other period specified for the batch mode. It is assumed that prior to accessing the VOID bill page interface **82**, the provider **20** has already submitted the bill payment request, saved as a draft the bill payment request, and/or has decided to proceed with a same day (or other period) review/cancellation process. Accordingly, the provider procedures **44** allow the provider **20** to navigate to the VOID bill submission interface **82**, whereby the provider **20** selects the draft or submitted bill to be cancelled via a check box (for example, "Void bill?") and the submit a VOID request (for example by a "Void selected" button). See scenarios below discussed users guide and example screens for the interfaces **14**, **76**, **78**, **80**, **82**. It should be noted that multiple bills can be voided simultaneously through the VOID interface **82**. Once the VOID request has been received by the integrated database **26**, a confirmation message is displayed on the interface **82** to the provider **20** thereby informing the provider **20** that the selected bills will be cancelled. The provider **20** is given the option to select OK for the bills to be cancelled or to select cancel so that the VOID selections will be cleared and therefore not voided from the integrated database **26**, through operation of the process **74** implemented by the work engine **36**.

Referring to FIG. 3, the bill submission search interface **80** of the general provider interface **14** enables the providers **20**, for both payment requests and LMR invoices, to investigate the adjudication and payment status of bills submitted to the integrated database **26**. For batch mode operation of the work flow engine **36**, real-time confirmation of submissions and payment status information may not be supported. Moreover, payment detail may only be available as per a check run schedule as implemented by the payment engine **40**. The interface **80** has a bill submission search results function **100** as part of the provider procedures **44**. The function **100** allows the provider **20** to retrieve bills/payment details from the databases **48**, **50** of the integrated database **26** by a variety of search parameters, such as but not limited to claim-invalid, claim number-valid, date range-invalid, data range-valid, status-invalid, status-valid, claim number and date range, and status and claim number. It is further recognised that other combinations of search parameters, including or excepting

those above, can also be used for treating the bill/payment details from the integrated database **26**. It is noted that SDT inquiry functionality and design can be leveraged for the provider **20** inquiry implemented by the interface **80**. The search function **100** co-ordinates the display of either a bill details page **102** or a payment details page **104** on the search interface **80**.

Operation of the function **100** is initiated when the provider **20** navigates to the bill payment inquiry component of the menu **86** of the general interface **14** (see FIG. 4). The provider **20** enters a claim number to filter the claims by and then submits. However, in one case the claim number entered may be invalid, and therefore an error message is displayed on the interface **80** by the search function **100** informing the provider **20** that no bill exists for that claim. The provider **20** can then select different claim numbers or parameters and then re-submit. Accordingly, the provider **20** can investigate adjudication results and payment details for submitted bills. An alternative to the above operation is when the provider **20** enters the claim number to filter the claims by, which contains a valid claim number, and therefore a list of bills is provided by the function **100** for the appropriate claim number for display on the interface **80**. The interface **80** can display the inquiry results as the bill detail page **102**, the payment detail page **104**, or a combination of both. Further, upon the inquiry for a valid claim number, the provider **20** can narrow the search by the finding/modifying additional criteria. As well, the provider **20** can select a particular bill (such as a link pertaining to a particular bill ID) to be viewed in greater detail. Accordingly, the function **100** interacts with the bill detail function **84** or the LMR bill detail function **92** to retrieve the requested bill detail. Alternatively, the provider **20** can select a paid amount (such as a link for a particular payment) to be viewed in detail. The function **100** can then interact with the bill detail function **84** or the LMR bill detail function **92** to retrieve required details for display on the bill detail page **102** or the payment detail page **104** on the interface **80**.

A further operation of the search function **100** allows the provider **20** to retrieve bills/payment detail information by date range. The provider **20** enters a start/end date range or uses a calendar control to select a date to refine the search results by, and submits through the interface **80**. The search function **100** then checks the date range against the bill details stored in the databases **48**, **50**, and for example can return with an invalid date range entered by displaying an error message on the interface **80** informing the provider **20** that no bills exist in the integrated database **26** for the date range selected. The provider **20** can then select a different date range or parameter and re-submit on the interface **80** through the search function **100**. An alternative to the above is when the date range entered by the provider **20** is considered valid by the search function **100**. In this case, a list of bills previously submitted by the provider **20** for the date range parameters selected is displayed on the interface **80**. Accordingly, the provider **20** can narrow the search by defining/modifying additional criteria and can select either a particular bill and/or a particular paid amount to be viewed in greater detail. It should be recognised that multiple bill/payment details can be accessed through the general interface **14** simultaneously, as long as they correspond to the selected search criteria submitted through the interface **80** to the search function **100**.

A further operation of the search function **100** is retrieving bill/payment detail information by status. The provider **20** selects the status range to filter submitted/draft bills by and then submits this to the search function **100**. The search function **100** then proceeds to review the contents of the

databases **48, 50**. If the status selected is invalid, then an error message is displayed on the interface **80** informing the provider **20** that no bills exist for the status selected. The provider **20** can then select a different status or other parameter and re-submit the new search criteria to the search function **100**.
 An alternative to the above is when the status criteria are considered valid by the search function **100**. In this case, the status selected produces a list of bills matching the selected status, subsequently displayed on the search interface **80**. As noted above, the provider **20** can then narrow the search by defining/modifying additional search criteria and/or can select particular bills and/or paid amounts to be viewed in greater detail.

A further operation of the search function **100** is to retrieve bill/payment detail information from the databases **48, 50** by claim number and date range. Accordingly, the provider **20** enters a start/end date range to refine the search results and then enters a claim number to filter the claims by and then submits the search request to the search function **100**. The search function **100** then searches through the databases **48, 50**, and if valid, provides a list of bills previously submitted by the provider **20** for a given claim during the date range parameters specified for display on the interface **80**. As noted above, the provider **20** can narrow the search further by defining/modifying additional criteria. Another operation is that the provider **20** can retrieve bills/payment detail information by specifying status and date range. Accordingly, the provider **20** enters into the interface **80** a start/end date range to refine the search results, then selects a status range to filter submitted/draft bills by, and then submits the search request to the search function **100**. The search function **100** retrieves the matching bills, if valid, from the databases **48, 50** with a selected status during the date range parameters for display on the interface **80**. The provider **20** can then narrow the search by defining/modifying additional criteria as noted above. A further operation of the search function **100** is to retrieve bill/payment detail information by status and claim number. The provider **20** enters a claim number to filter claims by and submits and selects a status range to filter submitted/draft bills by and submits. For a valid combination the claim number/status criteria is searched by the search function **100** in the databases **48, 50** to provide a list of bills usually submitted by the provider for a given claim during the given status for display on the interface **80**. As noted above, the provider **20** can narrow the search by defining/modifying additional criteria.

A further operation of the search function **100** is to retrieve a saved payment request, modify the bill detail, and the submit to the integrated database **26** for payment processing through the work flow engine **36**. This operation can be done by the provider **20** when bills have been created and saved for future processing. Accordingly, the provider **20** navigates to the bill/payment enquiry component of the menu **86** and then proceeds to enter a combination of search parameters to retrieve a list of bills (both active and pending). The parameters can include claim number, bill status, data range, and provider information. The provider **20** can then select from the list displayed on the interface **80** a particular bill with a status of pending. The details of the pending bill are displayed on the interface **80** and the provider **20** can make any necessary changes/additions of the draft bill. The provider **20** is then given the opportunity to submit the payment request, if the bill request is now complete, and then a confirmation prompt can appear on the interface **80** informing the provider **20** that the bill will be dispatched to the management agency **24** for payment processing. The provider **20** can select OK and the bill will be submitted to the integrated database **26** for processing, can select CANCEL and thereby edits/discard the

bill, or if the bill has been submitted previously the provider **20** can retrieve and void the bill using the void interface **82**.

The following outlines example interface **14, 76, 80, and 82** screens for a first scenario of submitting the payment request, a second scenario of submitting an LMR invoice, a third scenario of bill payment status enquiry, and a fourth scenario of voiding a bill. Further to that already described above, the scenarios 1, 2, 3, and 4 demonstrate the ability to provide multiple bill line items per claim for display on the appropriate interface **14, 76, 78, 80, 82**, and the interaction of popup boxes for service code searches, date of service selections, LMR expense codes, and provider searches. Further, the enquiry and void scenarios allow the retrieval and subsequent selection of multiple bills per page, as displayed on the appropriate interface **80, 82**, to facilitate easy of selection by the provider **20**.

Further, an application user guide is provided for the LMR submission interface **76**, the bill submission search interface **80** and void interface **82**, appropriate either to LMR and/or bill payment requests. It should be noted, that the user guide explains further functionality of the system **10** such as printing a screen with bill information **18** contained thereon, and system **10** login for providers **20** part of a provider database having access to the system **10**. It should be noted that registry opportunities for an unregistered provider **20** is also presented on the general provider interface **14**. It should be noted that the user guide should be considered as one example of system **10** application to a specific management agency **24**. Accordingly, some of the required criteria for entry into the data fields as displayed on the interfaces **14, 76, 80** may be other than those shown.

Also provided in this disclosure is an example implementation of the system **10** for provider bill submission UI web specification and error/warning messages. The web specification gives examples of the controls listed in the tab sequence of the menu **86** and sub-menus thereto, as well as the actions or events required on the various pages displayed on the interfaces **14, 76, 78, 80, 82** to initiate the corresponding listed responses. Further, the web specification also includes example data elements and data validation parameters.

Referring to FIG. **6**, the LMR workflow **199** is shown between the worker **22**, the management agency **24**, and primary (PSP) and secondary (SSP) service providers. Initially, the worker **22** submits a plan request **200** to the management agency **24**. The management agency then uses an adjudicator **24a** to compose a plan referral **202**, which is sent to a selected provider PSP. The PSP accepts the referral **202** and submits a completed or proposed plan **204** back to the management agency **24**. The adjudicator **24a** in conjunction with a health care professional **24b** reviews the plan and submits the approved plan **206** back to the PSP. The PSP can then sub-contract out portions **208** of the plan **206** to a number of SSP. It is noted that there may be situations in which the plan **204** requires amendment and the referral **202** may be declined, as further described below. Further, once the approved plan **206** is confirmed, a rule set **210** is sent by the management agency **24** into the rules database **64** (see FIG. **2**), which eventually is inserted into the adjudication rule set of the adjudication engine **38**. The PSP and SSP have access through the interface **14** (see FIG. **2**) to the integrated database **26**, for subsequent inquiry of the approved plan **206** as it is processed through the system **10**. It should be noted that the approved plan **206** enables the management agency **24** to pre-approve a group of bills associated with the particular LMR plan **206**. It should also be noted that it is preferable that only the intended provider PSP have access to the referral **202** through the interface **14**.

Referring again to FIG. 6, the LMR workflow 199 is designed to assist the workers 22 who have injuries that prevent a return to work with the accident employer. The management agency 24 partners with the providers PSP, SSP to deliver skills acquisition and training programs. The management agency participates in the workflow 199 by initiating referrals 202, approving plans 206, monitoring programs, and helping to pay bills associated with the approved plans 206 through payors (not shown) who provide payment as specified by the payment engine 40 (see FIG. 2). Accordingly, the referrals 202 mark the starting point for the LMR workflow 199, as the worker 22 receives LMR services preferably through the referral 202 from the management agency 24 to the provider PSP. The approved plan 206 provides the details needed to adjudicate LMR bills. The provider PSP submits the proposed plan 204 to the adjudicator 24a who then indicates approval or requests changes.

Once the plan 204 has been approved, bills can be submitted by the providers PSP, SSP to the IDB 26 (see FIG. 1) and paid according to the details in the plan 206, as further described below. The providers PSP, SSP incur costs in performing the LMR plan 206 for the worker 22. The providers PSP, SSP can then submit their bills through the interface 14 to the IDB 26 for their own expenses and for expenses incurred on behalf of the worker 22. The LMR bills are adjudicated by the adjudication engine 38 (see FIG. 2) and payment is determined by the payment engine 40 according to the rules established 210 previously upon plan approval.

Referring to FIG. 7, a send referrals process 212 starts 214 where the adjudicator 24a creates 216 the LMR referral 202 (see FIG. 6). The adjudicator 24a submits 218 the referral 202 for review by the nurse case manager 24b, who completes 220 the review and returns 222 the referral 202 to the adjudicator 24a. The adjudicator 24a receives 224 the referral 202 and sends 226 the referral 202 to the provider PSP, who can retrieve 228 the referral from the interface 14 (see FIG. 1) of the system 10. If the provider PSP accepts 230 the referral 202, then the referral 202 is assigned 232 to a consultant of the provider PSP to generate 234 the proposed plan 204. Further, the adjudicator 24a is notified 236 that the referral 202 has been accepted and the referral process 212 ends 238. Otherwise, the provider PSP declines 242 the referral and an alternate provider PSP is selected 244. This selection 244 continues until acceptance 236 is confirmed.

It should be noted that the referral process 212 can automatically select the provider PSP from the provider database 32 (see FIG. 1). Referring to FIG. 8, a selection algorithm 246 accesses 248 the database 32 through a plurality of selection criteria 250. The selection criteria 250 can include postal code matching 252 of the provider PSP and the worker 22 (geographic specific), provider expertise 254, provider selection frequency 256 for distributing a number of referrals among a group of eligible providers PSP, or any other combination of the above. It is recognised that other selection criteria can be used, if desired. Once the provider PSP is selected 258, the adjudicator 24a or other system administrator can override 260 the selection. It is also possible that the adjudicator 24a manually selects the provider PSP for the referral 202.

Referring to FIGS. 10-14, an example referral 202 is shown, including such as but not limited to worker 22 details, employment profile, physical precautions, referral details, as well as provider details that can be determined by the algorithm 246 (see FIG. 8).

Referring to FIG. 9, a manage plans process 262 starts from the previous step 234 of the referral process 212. The provider PSP creates 264 the proposed plan 204 (see FIG. 6) and submits it through the interface 14 (see FIG. 1) to the man-

agement agency 24. The agency 24 then receives 266 the proposed plan 204. The agency 24 determines 268 a value for the proposed plan 204 and then sends payment 270 to the provider PSP for the plan set-up and what level of assessment has already been completed with the worker 22. Further, the agency 24 also reviews 272 the proposed plan 204 for suitability. If the plan 204 is approved 274, then the adjudication rules 210 are determined and sent to the rules database 64 for subsequent use in adjudicating LMR plan bills associated with the approved plan 206. The provider PSP is notified 276 of the approval. Otherwise, the plan 204 is declined and amended 274, and the provider PSP is notified 278 that changes are required before final approval. The provider PSP then modifies the plan 204 and resubmits 280 it for approval. This change process can continue until the plan 204 is finally approved 274.

Further activities by the provider PSP and management agency 24 for the process 262 can include such as but not limited to; the provider PSP can view the status of the submitted plan 204, 206, the provider PSP can submit plan 206 amendments as necessary after approval, the provider PSP can view the balance remaining on approved plans 206, and the agency 24 can change the status of the plans 204, 206 (i.e. cancel, suspend, reactivate). In the case of changes or amendments of the approved plan, the rules 210 are also updated to reflect the changes. Further, during the amendment process of the plans 204, 206, all versions of the plans 204, 206 can be stored in the IDB 26 (see FIG. 2) for referral by the agency 24 to help in subsequent analysis of the plans 204, 206.

Therefore, as described above, the process 212 creates and sends the referral 202 to a selected provider PSP, who then either accepts or declines. Notification of the acceptance/decline status is given to the agency 24. Further, it should be recognised that once the initial referral 202 is created, all subsequent status information of the referral 202 is stored in the IDB 26 (see FIG. 2) for review by interested parties of the system 10 through the interfaces 12, 14. Following acceptance of the referral 202, the provider PSP prepare and submit the proposed plan 204, which can consist of such as but not limited to information pre-populated from the referral 202, an indication of the level of assessment completed with the worker, as well as details outlining the proposed program of care. After the plan 204 is submitted, the referring adjudicator 24a receives notification of the plan 204 and initial payment is given to the provider PSP base on the indication of the level of assessment completed. Therefore, it should be noted that the rules 210 are used by the adjudication engine 38 (see FIG. 2) to process the remaining level of assessment of the approved LMR plan 206 on a predictive basis.

The adjudicator 24a indicates initial adjudication results on the proposed plan 204, and have the option of either approving the plan 204 or requesting changes. The approved plan 206 triggers through the workflow engine 36 (see FIG. 2) the creation and submission of the payment rules 210 into the adjudication engine 38. These results are also accessible through the interfaces 12, 14 for interested parties. As discussed above, the providers PSP can also request amendment of the approved plan 206, however, preferably the initial level of assessment remains static. If amended, the adjudicator 24a is notified of the amendments and the amended plan 206 must be reapproved. It should be noted that the status and details of the amended plan 206 are stored in the IDB 26 (see FIG. 1) for access through the interfaces 12, 14. In the case of subsequent reapproval, the rules 210 are triggered for change and reinserted into the adjudication engine 38. Accordingly, the revised rules 210 replace the previous rule set 210. Further, the adjudicators 24a can change the status of the plan 206 at

any time, such as but not limited to suspension or cancellation. This change in status is recorded in the IDB 26, as well as revised in the rules 210 to deactivate the payment associated with the plan 206. Conversely, the adjudicators 24a can also reactivate the plan 206, if suspended or cancelled, which will also trigger the revision of the rules 210 to reactivate the payment rules associated with the plan 206. It should be noted that this change in status is also recoded in the IDB 26. Accordingly, the interfaces 12, 14 can be used by interested parties (i.e. agency 24 members and providers PSP) to inquire about the status and other details concerning referrals 202 and plans 204, 206, as well as the actual dollar amounts approved/paid against the plan 206.

It is also recognised that members of the agency 24 can override any provider PSP selection, change the PSP, view a series of referrals 204 against associated valid claim numbers, and view plans 204, 206 and amendments for any valid claim number. Further, members of the agency 24 can also update LMR parameters of the system 10, such as but not limited to the referral algorithm 246 operation, the selection criteria 250, as well as expense codes and dollar limits used by the plans 204, 206.

As discussed above, the predictive payment process 119 (see FIG. 6) is part of the system 10. The recurring payment requests associated with the LMR plans 206 are used in the administration of worker 22 claims in order to support the bill adjudication 38 process. There are four major functions used in the system 10 and associated process 199, including creation of a predictive payment, the modification of a predictive payment, searching for existing predictive payments, and a bill generation process. These functions are coordinated through the interfaces 12, 14 (see FIG. 1).

The create predictive payment process involves the set up of one or many predictive payment requests by the rules 210 for the purposes of the predictive plan 206 for the worker 22 claim. The modify predictive payment process involves the application of the administrative practices of a payor to the existing predictive plan 206 structure they have defined for a worker 22 claim. These modifications may include the following changes: modify service code; modify frequency; modify payment amount; modify start and end dates; modify units (where applicable); and modify payee. These items are included in the LMR DB 64 (see FIG. 2) as the series of payment rules 210, which are imported into the adjudication engine 38 once the plan 206 is confirmed. The search process involves retrieving and displaying information about the predictive payment plan 206 for the worker 22 claim based upon user specified criteria through the interfaces 12, 14, which can be used to obtain up to date information on the status and activity of the plan 206 as stored in the IDB 26 (see FIG. 2). The bill generation process involves the triggering of bill creation based on parameters defined during the predictive payment plan 206 maintenance (create and modify) processes. The bill generation process will apply logic through the workflow engine 36 and the adjudication and payment engines 38, 40 so that recurring payment requests will occur, which are associated with the details of the approved plan 206 and corresponding rules 210.

There are three main concepts that make up the functionality of the Predictive Payment process 119 as implemented on the system 10; namely referral, maintenance of predictive payment plans 206, and generation of bills from predictive payment plans 206. The predictive payment plan 206 (or PPP) is a collection of one or more payment requests with corresponding payment parameters such as amount, frequency, start and end dates, which are then organized in a structure for the purposes of plan definition. From the plan definition the

bill generation process will then be triggered to generate bills for specific payees as per the specified frequencies and start and end dates for the payment requests that are specified in the plan 206. The PPP is comprehensive meaning that it will include all of the predictive payment requests that a worker 22 claim needs in order to be able to build plans 206. The predictive payment plan 206 contains at least one predictive payment request and at least one payee.

Referring to FIG. 15, a Predictive Payment detail 300 includes the plan 206 that interacts through a payee 302 with the predictive payment request 304 (embodied in the rules 210, see FIG. 6). The payment request 304 identifies a service code 306, frequency 308, units 310, amount 312, and payment request start 314 and end 316 dates. For example, the agency 24 will determine that the worker 22 claim is entitled to a Personal Care Allowance and will then set up a predictive payment request 304 by the rules 210, which will allow a recurring payment to be sent to the specified payee 302. The agency 24 can indicate during the creation process which Personal Care Allowance code the worker 22 will receive reimbursement for, the frequency for which the worker will receive reimbursement, the number of units, the amount of the reimbursement, and the start date and end date for the reimbursement period. The payee 302 identifies who will receive reimbursement for the predictive payment request or requests 304. The agency 24 may indicate at the plan 206 level the payee 302 if all the payment requests 304 go to the same payee 302 or if there are multiple payees 302 per each payment request then the agency 24 can indicate the payee 302 for each individual payment request 304. The payee may be such as but not limited to the worker 22, an equipment/service supplier (such as an SSP), the provider PSP, or any other third party.

Referring to FIGS. 16 to 20, an example creation of the plan 204, 206 is shown. In general, the creation of the plan 204, 206 includes:

1. User (of the provider 20 see FIG. 2) logs into the system 10 through the interface 14,
2. User selects the Create Predictive Payment Plan option,
3. System 10 displays the following fields: Claim Number, Worker First Name, Worker Last Name on the interface 14,
4. User enters worker's name and or claim #,
5. User issues a Search command,
6. System 10 searches for matching criteria and validates that the claim number is a valid claim number,
7. System 10 determines that the claim number is valid and displays the results to the user on the interface 14,
8. System 10 displays the following fields to the user for the specific claim number:

Section 1: Plan Header Tab (see FIG. 16)

Claim number
 Claim status
 Worker name (first and last)
 Worker DOA
 Desk ID
 Plan ID
 Plan Version
 Plan Status
 Date Plan Created
 Plan Start Date
 Plan End date
 Plan Review Date
 Plan Suspension Period
 date Plan Last Modified
 Plan Modified By

Section 2: Payment Details Tab (see FIG. 17)

Status
Service Code
Freq
Unit
Amount 5
Payment Start Date
Payment End Date
Payee Name
Section 3: Assessment Tab (see FIG. 19)
PCA Total Amount 10
CA Total Amount
Rationale Notes for assessment detail

Section 4: CEW Tab (see FIG. 19) provides a summary of the various cost categories and Section 5: View Payments Tab (see FIG. 20) provides summary of approved amounts once the plan 204 has been submitted and then reviewed by the adjudicator 24a (see FIG. 6). 15

Then, the creation of the plan 204, 206 continues with:

9. The Plan 206 Start Date is auto-populated based on the earliest payment start date on the that will be entered on the Plan Detail tab; 20
10. The Plan End Date can be automatically populated by the system to 5 years, for example, from the Plan Start Date. This date can be modified by the user to a date other than the preset date, if desired; 25
11. The system will auto-populate the Plan Review Date to 12 months, for example, prior to the Plan End Date;
12. Next the user moves to the Payment Detail tab of the page (see FIG. 21) and begins building the plan 206;
13. User selects the appropriate service code. User may select the service code from the predefined pick list which will highlight their selection to flag to the user what they have chosen or they may click the Other Service Code icon which will open the scope of the service code search to all service codes. The user can search for the service code based on keyword and or by service code number; 30
14. System 10 displays the selected service code in the Service Code field. The service code description will be displayed below the service code field. System will determine if selected service code belongs to a predefined group or "bundle" and will automatically pre-populates the next detail line items with all the service codes within that "bundle"; 40
15. User moves to the Frequency field and indicates the appropriate frequency from the predefined pick list (if required, this is a mandatory field but is sometimes populated by system logic); 45
16. System 10 highlights and displays the user's frequency selection in the pick list; 50
17. User moves to the Unit field and enters the numeric number of units to help determine the dollar value of the payment. For example, the unit value entered is equivalent to the total number of hours allowed for that service per month; 55
18. User moves to the Amount field and enters the dollar amount of the payment (if required, this is a mandatory field but is sometimes populated by system logic) and is displayed to the user.
19. User moves to the Payment Start Date and enters the date that the first bill should be generated to begin the recurring payment cycle. A calendar icon can be available to the user in order to facilitate the user in the date selection process; 60
20. User moves to the Payment End Date and if needed alter the default date of Dec. 31, 9999 that the last bill should be generated to end the recurring payment cycle. 65

A calendar icon can be available to the user in order to facilitate the user in the date selection process;

21. The payee field can be pre-populated with the worker's 22 name, however, the user may change payee as required (i.e. to the worker's trustee.) by moving to the Payee field. User can click on the Payee icon so that they may search for the appropriate payee. The user will be able to search for the payee based on their name (first and or last) and or Provider TIN# which will have already been set up for the payee whether they be a worker, supplier, provider or third party;
22. System 10 will display the full address of the Payee to the user, the user will click on the payee ID and the system will populate the payee field in the Payment request Section with the full name of the payee;
23. It is assumed that the payee will be the same for all of the payment requests. Once Payee field has been changed, the system 10 will make active a checkbox entitled All Payee, which will be checked. The user can uncheck this checkbox which means that for every payment detail they now enter for the plan 206, a payee will have to be selected and all payee name fields on the page will be deleted;
24. User may repeat steps 10-21 for every different payment request 304 they wish to set up for this predictive payment plan 206;
25. System 10 will also allow the user to "de-select" a payment detail automatically created based on service groupings (Step 13);
26. User moves to the Rationale Tab of the page and if needed in the Rationale Notes field enter any additional information. The system will pre-populate the PCA Total Amount and CA Total Amount fields. The CA Total Amount is equal to the total amount of clothing allowance paid per year to the worker (system 10 adds all clothing allowance service codes to be paid for the year). This amount does not include arrears amount. The PCA Total Amount is equal to the total amount of Personal Care Allowance paid per month (system 10 adds up all PCA service codes to be paid for the month into one amount). This amount does not include arrears amount;
27. User issues the Save command. System saves the information to the database and the predictive plan is successfully saved with a status of "Pending" allowing the user to save a partially completed plan. To activate the plan 206, user will go to the Modify Plan option and completed all required information;
28. User issues the Submit command on the Rationale tab;
29. System 10 can run validation checks for completeness on mandatory fields and format of data entered into all fields that require population by a user and ensuring that no duplicate payment requests have been created;
30. System 10 saves the information to the database 26 (see FIG. 2) and the predictive plan 206 is successfully saved as "Active".

Referring to FIGS. 2 and 22, once the LMR UR rules DB 64 information has been inserted into the adjudication engine 38, in response to the approved plan 206 (see FIG. 6), generation of bills 402 from the predictive payment requests 304 (see FIG. 15) can begin. The bill generation process 400 applies logic through the workflow engine 36 at a predetermined time/schedule on a daily basis, for example, to retrieve predictive payment details (corresponding to the payment requests 304 of the plans 206) from the Bill Scheduling database 62. The predictive bill data of the database 62 is reformatted by the workflow engine 40 and then inserted into the bill adjudication queue 48, for eventual LMR bill 402 creation

and submission into the adjudication engine **38** for adjudication. The adjudication of these LMR bills **402** provides the payment engine **40** with payment details, which are used to issue payment by the system **10** to the providers PSP in response to the predictive elements of the corresponding plan **206**. The process **400** uses the parameters of the payment request(s) **304** within the plan **206** to determine what data to insert into the payment bill entity. The process **400** also applies logic in order to determine the required number of bills to be generated based on the payee combinations for the predictive payment plan **206**, for example coordination of benefits (COB) that are part of the plan **206** as well as direct payment to the worker **2** and SSPs if desired. The bill generation process **400** can use standard fields and values, such as but not limited to the **837** EDI import process.

Referring to FIG. **22**, the bill generation process **400** is run on a predefined frequency in order to pick up from the database **62** and send bill payment requests **304** that run on user defined anniversary dates, as well as being able to run on specific set dates. The trigger for the bill generation will be the parameters **306**, **308**, **310**, **312**, **314**, **316** in the predictive payment plan **206** (see FIG. **15**). Accordingly, the automatic generation of the LMR bills **402** involves the coordinated effort between the workflow engine **40** and the contents of the IDB **26**, as well as the procedures **70**, **72**, **74**, **68** as discussed above (see FIG. **2**).

Referring again to FIG. **22**, the process **400**:

1. uses the system **10** through the workflow engine **40** to trigger **404** the bill generation to start on a daily basis or other predefined period;
2. the system **10** checks **406** the Predictive Payment schema in database **62** of the IDB;
3. the system checks **408** each predictive payment plan **206** stored in system **10** for an Active status;
4. for each plan **206** that is active the system **10** also checks **408** to see that all payment requests **304** are Active;
5. if any payment requests **304** are not active **410** the bill generation process **400** does not use them for bill generation and proceeds to the next **411** bill;
6. for each active plan **206** with active payment requests **304** the system **10** checks **412** to see what date is contained in a Next Bill Generation Date column of the scheduling data in the database **62**;
7. if the date contained in the Next Bill Generation Date column is equal/matches **414** to the current date then the system **10** flags that for this plan **206** and payment requests **304** the system **10** must generate the bill **402**;
8. once the system **10** flags that the bill **402** is required for this plan **206** and payment requests **304** it moves **416** the date in the Next Bill Generation Date column to a Last Bill Generation Date column, hence updating **416** the bill generation frequency;
9. next the system **10** looks at a Frequency parameter for that payment request **304** and calculates what date the next bill **402** needs to be generated on and inserts that date value into the Next Bill Generation Date column;
10. the system checks **418** for other bills **402** and steps 6-9 are repeated by the system **10** until it has collected all of the payment requests **304** that require each of the bills **402** to be generated for specific plans **206**;
11. next the system **10** evaluates if one or more bills **402** are required to be generated that day/period for that plan **206** by confirming **420** the payment details in steps 12-15;
12. the system **10** checks an All Payee flag for each potential bill **402**;
13. if the All Payee flag is set then the system **10** will skip to step 16;

14. if the All Payee flag is not set then the system **10** looks at a payee id parameter, which denotes the identity for different payees;

15. for each different payee id per payment request **304** for that plan **206** the system **10** can create a different bill **402**;

16. once the system **10** has determined how many bills **402** are required for one plan **206**, it begins populating **422** the bill export table **48** in the IDB **26** with the parameters stored in the predictive payment schema of the bill scheduling database **62**;

17. once the system **10** has completed inserting all the bill **402** data into the bill export table **48** in the IDB, the bill generation process is completed and the query bills procedure **70** is used by the workflow engine **40** to import the LMR bills **402** into the adjudication engine **38** for adjudication **424** and eventual bill **402** generation.

It should be noted that information on the processing/payment history of the bills **402** is stored in the IDB for subsequent access through the interfaces **12**, **14**. Further, when the predictive payment plan **206** or one of the service codes **306** within the predictive payment plan **206** has moved from suspend to reactivate status, the system **10** determines the start and end date of the suspension period and determines if during this time the corresponding bill **402** was not generated. For example, an activation date can be provided by the user to determine date range for bill generation for the suspended period. Preferably, if no activation period is supplied, the bill generation process **400** will assume that the reactivation period will be the full suspension period.

Although the invention has been described with reference to certain specific embodiments, various modifications thereof will be apparent to those skilled in the art without departing from the spirit and scope of the invention as outlined in the claims appended hereto.

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1. An electronic invoice processing system configured for coordinating processing of electronic invoices submitted by a plurality of providers of insurance services, the insurance services predefined in insurance plans pertaining to a plurality of respective insurance service recipients, the electronic invoices for requesting payment for the insurance services, the system comprising;

a) a provider interface configured for receiving an update invoice request including a search parameter from a respective provider of the plurality of providers, the search parameter for identifying from the plurality of electronic invoices an invoice matching the search parameter, said invoice corresponding to the insurance services provided by the respective provider, said invoice awaiting adjudication and being both read and write accessible via the provider interface;

b) a storage for storing said invoice including processing status pertaining to said invoice as awaiting adjudication;

c) a workflow engine coupled to the storage and configured for coordinating the processing of each of the electronic invoices according to processing rules based on contents of the insurance plans and for updating invoice information of said invoice including the processing status for said invoice in response to the invoice processing, the contents of each of the insurance plans including definitions for a plurality of valid insurance services pertaining to an insurance service recipient of the plurality of respective insurance service recipients and including corresponding valid expenses for performing each of the plurality of valid insurance services; and

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d) a search system coupled to the storage for using the search parameter to access the invoice information of said invoice, said invoice representing a portion of the contents of a respective insurance plan of the insurance plans, and for providing the invoice information including the processing status as unadjudicated for use in generating a response to the update invoice request.

2. The system according to claim 1 further comprising a search function of the search system for accessing the invoice information in the storage, the search function for retrieving the invoice information using a number of search options selected from the group comprising: an insurance claim number pertaining to the portion of the contents of the respective insurance plan; identification of said insurance service recipient; a date range; and a selected status including pending or processed.

3. A method for coordinating the submission and processing of an electronic invoice according to predictive payment data of an insurance plan, the electronic invoice for requesting payment for insurance services defined in the insurance plan, the method comprising the steps of:

- a) storing the predictive payment data corresponding to the insurance plan in a storage coupled to an adjudication engine, the contents of the insurance plan including definitions for a plurality of valid insurance services and including corresponding valid expenses for performing each of the plurality of valid insurance services;
- b) inserting a predictive payment parameter into a rule set of the adjudication engine for facilitating eventual adjudication of the electronic invoice at a predefined interval, the predictive payment data corresponding to a portion of the contents of the insurance plan;
- c) triggering generation of the electronic invoice at the predefined interval according to the predictive payment parameter, the electronic invoice including the predictive payment data represented in the portion of the contents of the insurance plan;
- d) providing the electronic invoice to the adjudication engine for processing;
- e) updating the predictive payment parameter in the storage for recognizing submission of the electronic invoice to the adjudication engine at the predefined interval; and
- f) generating a processing result of the electronic invoice as defined by the predictive payment data once adjudicated.

4. The method according to claim 3, wherein the predictive payment parameter specifies the predefined interval and is part of a parameter set defined in the predictive payment data of the insurance plan, the parameter set including at least one further predictive payment parameter selected from the group comprising: service codes; expense codes; payment amounts of the valid expenses; payment frequency; start and end dates for the generation of the electronic invoice; units; and payee information.

5. An electronic invoice processing system configured for coordinating access to updated status information on the processing of electronic invoices submitted by a plurality of providers of insurance services, the insurance services predefined in insurance plans pertaining to a plurality of respective insurance service recipients, the electronic invoices for requesting payment for the insurance services, the system comprising;

- a provider interface configured for receiving an update invoice request including a search parameter from a respective provider of the plurality of providers, the search parameter for identifying from the plurality of electronic invoices an invoice matching the search

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parameter, said invoice corresponding to the insurance services provided by the respective provider, said invoice awaiting adjudication and being both read and write accessible via the provider interface;

a storage for storing said invoice including status information pertaining to the processing of said invoice;

a workflow engine coupled to the storage and configured for updating status information for each of the electronic invoices in response to processing rules reflecting contents of the insurance plans, the contents of each of the insurance plans including definitions for a plurality of valid insurance services pertaining to an insurance service recipient of the plurality of respective insurance service recipients and including corresponding valid expenses for performing each of the plurality of valid insurance services; and

a search system coupled to the storage for using the search parameter to access said invoice, said invoice representing a portion of the contents of a respective insurance plan of the insurance plans, and for providing the invoice information including the processing status as unadjudicated for use in generating a response to the update invoice request for said invoice.

6. The system of claim 5, wherein status information includes a status selected from the group comprising: pending; result; and payment.

7. The system of claim 6, wherein the status information includes further information selected from the group comprising: insurance claim data; invoice payment details; and processing details.

8. The system of claim 5, wherein the plurality of valid insurance services include services selected from the group comprising: a service; a treatment and a product.

9. The system of claim 5, wherein the respective insurance plan includes the definitions of the plurality of valid insurance services for two or more insurance service recipients from the plurality of insurance service recipients.

10. The system of claim 5 further comprising the storage including an invoice queue for coordinating the processing of the electronic invoices, the invoice queue containing invoice information including said invoice and corresponding details of said invoice awaiting adjudication.

11. The system of claim 10 further comprising the workflow engine configured for coordinating a scheduling of the electronic invoices for insertion into a respective position in the invoice queue for subsequent processing.

12. The system of claim 11 further comprising the workflow engine configured for generating said invoice for insertion into the invoice queue as a predictive payment request, the predictive payment request including generated invoice payment details based on the portion of the contents of the respective insurance plan.

13. The system of claim 12 further comprising the workflow engine configured for periodic insertion of said invoice into the invoice queue based on a payment frequency defined in the portion of the contents of the respective insurance plan.

14. The system of claim 12 further comprising the workflow engine configured for generating processing rules for the predictive payment request to use in processing said invoice.

15. The system of claim 14 further comprising the workflow engine configured for generating the processing rules of the predictive payment request in response to receipt of the respective insurance plan.

16. The system of claim 11 further comprising a scheduling table coupled to the workflow engine for use in coordinating the scheduling of the electronic invoices.

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17. The system of claim 16, wherein the contents of the scheduling table facilitate implementation of a scheduling action selected from the group comprising: hold said invoice for additional action before insertion into the invoice queue; and direct insertion into the invoice queue.

18. The system of claim 5 further comprising the provider interface configured for receiving a further update invoice request including a further search parameter from a further provider different from the respective provider, the further search parameter for identifying from the plurality of electronic invoices a further invoice matching the further search parameter, said further invoice corresponding to the insurance services provided by the further provider, said further invoice representing a further portion of the contents of the respective insurance plan such that the further portion is different from said portion.

19. An electronic invoice processing method executed within an electronic bill processing network for coordinating access to updated status information on the processing of electronic invoices submitted by a plurality of providers of insurance services, the insurance services predefined in insurance plans pertaining to a plurality of respective insurance service recipients, the electronic invoices for requesting payment for the insurance services, the method comprising;

receiving, at a display user interface of a service provider, an update invoice request including a search parameter from a respective provider of the plurality of providers, the search parameter for identifying from the plurality of electronic invoices an invoice matching the search parameter, said invoice corresponding to the insurance services provided by the respective provider, said invoice awaiting adjudication and being both read and write accessible via the provider interface;

storing, in a memory of a storage database, said invoice including the status information pertaining to the processing of said invoice in a storage;

updating, at a memory of a workflow engine, the status information for each of the electronic invoices in response to processing rules reflecting contents of the insurance plans, the contents of each of the insurance plans including definitions for a plurality of valid insurance services pertaining to an insurance service recipient of the plurality of respective insurance service recipients and including corresponding valid expenses for performing each of the plurality of valid insurance services; and

applying, at a memory of a database search system, the search parameter to access the invoice information of said invoice, said invoice representing a portion of the contents of a respective insurance plan of the insurance plans, and for providing the accessed invoice information including the processing status as unadjudicated for use in generating a response to the update invoice request.

20. The method of claim 19 further comprising the step of storing the electronic invoices in an invoice queue of the storage for coordinating the processing of the electronic invoices.

21. The method of claim 20 further comprising the step of coordinating a scheduling of the electronic invoices for insertion into a respective position in the invoice queue for subsequent processing.

22. The method of claim 21 further comprising the step of generating said invoice for insertion into the invoice queue as a predictive payment request, the predictive payment request including generated invoice payment details based on the portion of the contents of the respective insurance plan.

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23. The method of claim 22 further comprising the step of periodically inserting of said invoice into the invoice queue based on a payment frequency defined in the portion of the contents of the respective insurance plan.

24. The method of claim 22 further comprising the step of generating processing rules for the predictive payment request to use in processing said invoice.

25. The method of claim 24 further comprising the step of generating the processing rules of the predictive payment request in response to receipt of the respective insurance plan.

26. The method of claim 21 further comprising the step of using a scheduling table in coordinating the scheduling of the electronic invoices.

27. The method of claim 26, wherein the contents of the scheduling table facilitate implementation of a scheduling action selected from the group comprising: hold said invoice for additional action before insertion into the invoice queue; and direct insertion into the invoice queue.

28. The method of claim 19 further comprising step of receiving a further update invoice request including a further search parameter from a further provider different from the respective provider, the further search parameter for identifying from the plurality of electronic invoices a further invoice matching the further search parameter, said further invoice corresponding to the insurance services provided by the further provider, said further invoice representing a further portion of the contents of the respective insurance plan such that the further portion is different from said portion.

29. A method executed within an electronic bill processing network for coordinating the submission and processing of an electronic invoice according to predictive payment data of an insurance plan, the electronic invoice for requesting payment for insurance services defined in the insurance plan, the method comprising the steps of:

storing, in a memory of a storage database coupled to an adjudication engine, the predictive payment data corresponding to the insurance plan, the contents of the insurance plan including definitions for a plurality of valid insurance services and including corresponding valid expenses for performing each of the plurality of valid insurance services;

inserting, at a memory of a queue database, a predictive payment parameter into a rule set of the adjudication engine for facilitating eventual adjudication of the electronic invoice at a predefined interval, the predictive payment data corresponding to the contents of the insurance plan;

triggering generation of the electronic invoice at the predefined interval a memory of the storage database, the electronic invoice including the predictive payment data represented in the contents of the insurance plan;

providing, from the memory of the storage database, the electronic invoice to the adjudication engine for processing; and

upon recognizing completion of processing of the electronic invoice at the predefined interval, generating, at a processor of the adjudication engine, a processing result of the electronic invoice as defined by the predictive payment data once adjudicated.

30. The method according to claim 29, wherein the predictive payment parameter specifies the predefined interval.

31. The method according to claim 29, wherein the predictive payment parameter is part of a parameter set defined in the predictive payment data of the insurance plan, the parameter set including at least one parameter selected from the group comprising: the predefined interval; service codes; expense codes; payment amounts of the valid expenses; pay-

ment frequency; start and end dates for the generation of the electronic invoice; units; and payee information.

32. The method of claim **29**, wherein the plurality of valid insurance services include services selected from the group comprising: a service; a treatment and a product.

33. The method of claim **29**, wherein the insurance plan includes the definitions of the plurality of valid insurance services for two or more individual insurance service recipients.

34. The method of claim **29** further comprising the step of selecting the predictive payment data as a subset of the contents of the insurance plan.

35. The method of claim **34** further comprising the step of including invoice payment details in the processing result of the electronic invoice based on the subset of the contents of the insurance plan.

36. The method of claim **29** further comprising the step of generating processing rules of the rule set for use in processing said invoice.

37. The method of claim **36** further comprising the step of generating the processing rules in response to receipt of the insurance plan.

38. The method of claim **29** further comprising the step of using a scheduling table in coordinating scheduling of the electronic invoice with respect to other electronic invoices for processing by the adjudication engine, wherein the contents of the scheduling table facilitate implementation of a scheduling action selected from the group comprising: hold said invoice for additional action before insertion into an invoice queue; and direct insertion into an invoice queue.

39. A system for coordinating the submission and processing of an electronic invoice according to predictive payment data of an insurance plan, the electronic invoice for requesting payment for insurance services defined in the insurance plan, the system comprising:

a storage for storing the predictive payment data corresponding to the insurance plan for processing, the contents of the insurance plan including definitions for a plurality of valid insurance services and including corresponding valid expenses for performing each of the plurality of valid insurance services;

a workflow engine configured for inserting a predictive payment parameter into a rule set for facilitating eventual adjudication of the electronic invoice at a predefined interval, the predictive payment data corresponding the contents of the insurance plan;

a scheduling module configured for use in triggering generation of the electronic invoice at the predefined interval and configured for recording completion of the processing of the electronic invoice at the predefined interval, the electronic invoice including the predictive payment data represented in the contents of the insurance plan; and

an adjudication engine for receiving the electronic invoice for processing based on the rule set and for generating a processing result of the electronic invoice once adjudicated.

40. The system according to claim **39**, wherein the predictive payment parameter specifies the predefined interval.

41. The system according to claim **39**, wherein the predictive payment parameter is part of a parameter set defined in the predictive payment data of the insurance plan, the parameter set including at least one parameter selected from the group comprising: the predefined interval; service codes; expense codes; payment amounts of the valid expenses; payment frequency; start and end dates for the generation of the electronic invoice; units; and payee information.

42. The system of claim **39**, wherein the plurality of valid insurance services include services selected from the group comprising: a service; a treatment and a product.

43. The system of claim **39**, wherein the insurance plan includes the definitions of the plurality of valid insurance services for two or more individual insurance service recipients.

44. The system of claim **39** further comprising the predictive payment data represents a subset of the contents of the insurance plan.

45. The system of claim **44** further comprising the adjudication engine configured for including invoice payment details in the processing result of the electronic invoice based on the subset of the contents of the insurance plan.

46. The system of claim **39** further comprising the workflow engine configured for generating processing rules of the rule set for use in processing said invoice.

47. The system of claim **46** further comprising the workflow engine configured for generating the processing rules in response to receipt of the insurance plan.

48. The system of claim **39** further comprising a scheduling table for use in coordinating scheduling of the electronic invoice with respect to other electronic invoices for processing by the adjudication engine, wherein the contents of the scheduling table facilitate implementation of a scheduling action selected from the group comprising: hold said invoice for additional action before insertion into an invoice queue; and direct insertion into an invoice queue.

49. The method of claim **13** wherein the insurance services are related to a continuum of health care provided to the insurance service recipient, such that said invoice is one of a plurality of the electronic invoices pertaining to the respective insurance plan.

50. The method of claim **17** wherein the insurance services are related to a continuum of health care provided to the insurance service recipient, such that said invoice is one of a plurality of the electronic invoices pertaining to the respective insurance plan.

51. The method of claim **23** wherein the insurance services are related to a continuum of health care provided to the insurance service recipient, such that said invoice is one of a plurality of the electronic invoices pertaining to the respective insurance plan.

52. The method of claim **27** wherein the insurance services are related to a continuum of health care provided to the insurance service recipient, such that said invoice is one of a plurality of the electronic invoices pertaining to the respective insurance plan.

53. The system according to claim **1**, wherein the update invoice request consists of a void request.

54. The system according to claim **1**, wherein access via the provider interface permits sequential rather than parallel editing of the invoice information.

55. The system according to claim **54**, further comprising the storage including an invoice queue for coordinating the processing of said invoice, the invoice queue containing the invoice information including said invoice and corresponding details of said invoice.

56. The system according to claim **5**, wherein the update invoice request consists of a void request.

57. The system according to claim **5**, wherein access via the provider interface permits sequential rather than parallel editing of the invoice information.

58. The method according to claim **19**, wherein the update invoice request consists of a void request.

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59. The method according to claim **19**, wherein access via the provider interface permits sequential rather than parallel editing of the invoice information.

60. The method according to claim **59**, further comprising the storage including an invoice queue for coordinating the

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processing of said invoice, the invoice queue containing the invoice information including said invoice and corresponding details of said invoice.

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